Vol. 1025 Number 1

OFFICIAL GAZETTE

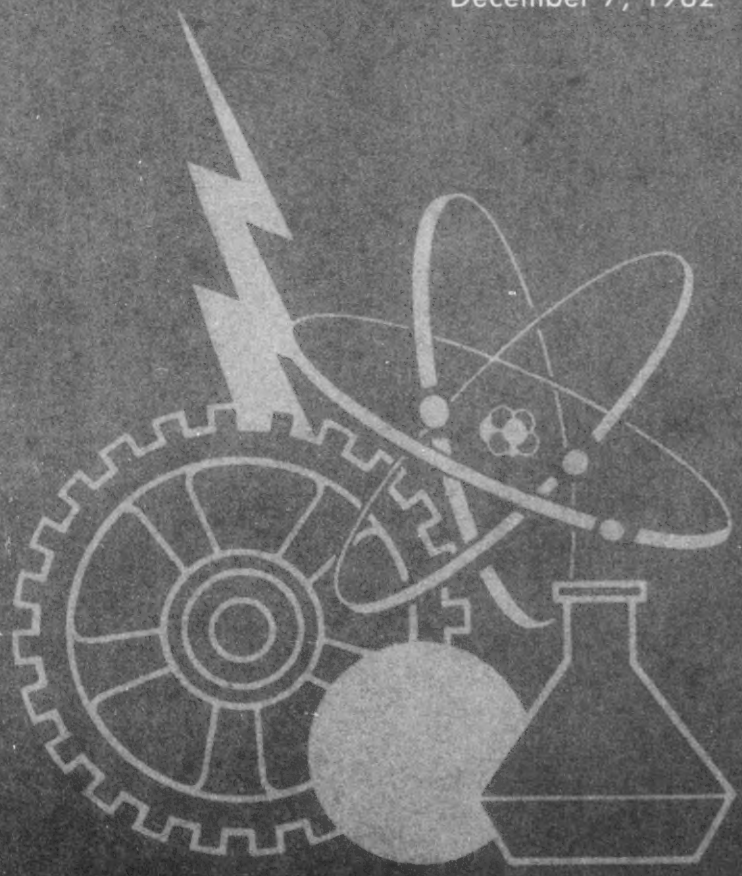
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to

PATENTS

December 7, 1982



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OF COMMERCE

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and
Trademark
Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

December 7, 1982 Volume 1025 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,268,351, Re. S.N. 393,979, Filed June 30, 1982, Cl. 430/99, XEROGRAPHIC FIXING METHOD AND APPARATUS, Warren G. Van Dorn, Owner of Record: *Xerox Corp., Rochester, N.Y.,* Attorney or Agent: Benjamin B. Sklar, Ex. Gp.: 166

3,698,271, Re. S.N. 415,452, Filed Sept. 7, 1982, Cl. 83/99, ADJUSTABLE AIR EJECT DIE-CUTTING SYSTEM, Martin Kesten, et al., Owner of Record: *Preston Engravers, Inc., Windsor, Conn.,* Attorney or Agent: Peter L. Costas, Ex. Gp.: 324

3,870,515,Re. S.N. 392,407, Filed June 25, 1982, Cl. 430/126, METHOD FOR ELECTROSTATIC PAPER STRIPPING BY NEUTRALIZATION OF TRANSFER CHARGE, Norbert H. Kaupp, Owner of Record: *Xerox Corp., Rochester, N.Y.,* Attorney or Agent: Paul F. Morgan, Ex. Gp.: 166

4,223,372, Re. S.N. 418,678, Filed Sept. 16, 1982, Cl. 362/8, ELECTRIC FLASH DEVICE, Yoskiyuki Takematsu, Owner of Record: *Assignor of 50% to Fuji Koeki Corp., Tokyo, Japan,* Attorney or Agent: Martin Fleit, Ex. Gp.: 223

4,260,902, Re. S.N. 428,780, Filed Sept. 30, 1982, Cl. 290/43, FLUID-DRIVEN ROTARY ENGINE, William A. Crider, Owner of Record: *Inventor,* Attorney or Agent: Henry Shur, et al., Ex. Gp.: 217

4,231,719, Re. S.N. 429,956, Filed Sept. 30, 1982, Cl. 417/366, PROCEDURE AND APPARATUS FOR DEGASSING FUEL SUPPLY PUMP, Peter Ringwald, et al., Owner of Record: *Robert Bosch G.m.b.H., Stuttgart, West Germany.* Attorney or Agent: Edwin E. Greigg, Ex. Gp.: 343

4,242,109, Re. S.N. 415,114, Filed Sept. 7, 1982, Cl. 55/230, AIR CLEANER AND HUMIDIFIER, John W. Edwards, Owner of Record: *Inventor,* Attorney or Agent: Henry C. Bunson, et al., Ex. Gp.: 177

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,837,501, Reexam. No. 90/000,283, Requested: Nov. 4, 1982, Cl. 210/522, SEPARATION DEVICE, Jacob Pielkenrood, Owner of Record: *Requester,* Attorney or Agent: Fulbright & Jaworski, Ex. Gp.: 176 Requester: Pielkenrood-Vinitex B.V., Assendelft, Holland

4,266,236, Reexam. No. 90/000,285, Requested: Nov. 8, 1982, Cl. 357/34, TRANSISTOR HAVING EMITTER RESISTORS FOR STABILIZATION AT HIGH POWER OPERATION, Kazuyoshi Ueda, Owner of Record: *Nippon Electric Co., Ltd., Tokyo, Japan,* Attorney or Agent: Sughrue, Rothwell, et al., Ex. Gp.: 253, Requester: Fujitsu Ltd., Kawasaki, Japan

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Jan. 7, 1983.

DONALD J. QUIGG,
Nov. 10, 1982. *Chairman, Committee on Enrollment.*

Carrier, Robert, 255 Quinn Blvd., Longueuil, Que., Canada J4H 2M9

Goldman, Michael L., 2727 S. Buchanan St., Arlington, Va. 22206

Removal from Register

Pursuant to the provisions of 37 C.F.R. 1.347, a letter was directed on Sept. 15, 1982, to Mr. Melvin K. Silverman at Silverman & Jackson, 999 Clifton Ave., Clifton, N.J. 07013, the last known post office address of record with the Committee on Enrollment. No reply was received within the period of thirty days therein set. Accordingly, his name is being removed from the Register of Attorneys.

Pursuant to the provisions of 37 C.F.R. 1.347, a letter was directed on Sept. 29, 1982, to Mr. John M. O'Neill at 9334 Ellen, Highland, Ind. 46322 the last post office address furnished by him to the Committee on Enrollment. No reply was received within the period of thirty days therein set. Accordingly, his name is being removed from the Register of Attorneys.

DONALD J. QUIGG,
Nov. 10, 1982. *Chairman, Committee on Enrollment.*

Department of Commerce

Patent and Trademark Office

37 CFR Parts 1 and 2

[Docket No. 21001-200]

Court Review of Patent and Trademark Office Decisions; Correction

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule: Correction.

SUMMARY: Patent and Trademark Office corrects an inadvertent error in a final rule published in the **Federal Register** on Oct. 26, 1982 (47 FR 47380) which amended its rules of practice relating to court review of its decisions.

FOR FURTHER INFORMATION CONTACT: Joseph F. Nakamura by telephone at (703) 557-3525 or by mail marked to his attention and addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231

SUPPLEMENTARY INFORMATION: On Oct. 26, 1982, the Patent and Trademark Office published a final rulemaking action revising paragraphs (a) and (c) of § 1.304 in Title 37. Code of Federal Regulations, to correct a reference in these paragraphs to the U.S. Court of Customs and Patent Appeals. The correction substitutes the name of the successor court, the U.S. Court of Appeals for the Federal Circuit. Through inadvertence, the text of paragraph (a) which was published on Oct. 26, 1982, was the text which had been superseded on Oct. 1, 1982, pursuant to an earlier final rulemaking action published in the **Federal Register** on July 30, 1982 (47 FR 33086). In the earlier final rulemaking action, paragraph (a) but not (c), of §1.304 had been revised to correct the name of the court. Accordingly, the revision of paragraph (a) of §1.304 in the later rulemaking action published on Oct. 26, 1982, in the **Federal Register** (47 FR 47380) is being deleted.

DONALD J. QUIGG,
Oct. 29, 1982. *Acting Commissioner of Patents and Trademarks.*

The following correction is made in the **Federal Register** notice of final rulemaking published Oct. 26, 1982 (47 FR 47380);

In paragraph No. 6 on page 47381, the language "paragraphs (a) and" in the introductory sentence is changed to read "paragraph" and the text of paragraph (a) of §1.304 o pages 47381-47382 is removed.

[FR Doc. 82-30401 Filed 11-4-82; 8:45 am]

BILLING CODE 35 10-16-M

Change in Location of December 16, 1982 Rule Hearing

The public hearing scheduled for Dec. 16, 1982 concerning proposed rules on "Revision of Patent Procedure" published on Oct. 27, 1982 at 47 FR 47744-47756 and on Nov. 2, 1982 at 1024 O.G. 5-38 will be held in Salon H, Marriott Crystal Gateway, 1700 Jefferson Davis Hwy., Arlington, Va. instead of in Room 11C24 of Bldg. 3, Crystal Plz., as previously indicated. The hearing will begin at 9:30 A.M. Requests to present oral testimony at the hearing should be received on or before Dec. 9, 1982.

GERALD J. MOSSINGHOFF,
Nov. 15, 1982 *Commissioner of Patents and Trademarks.*

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-398,001. PROPAGATION OF HEMORRHAGIC ENTERITIS VIRUS IN A TURKEY CELL LINE. Department of Agriculture.

SN 6-367,638. A NOVEL SYNTHESIS OF ARYL ESTERS AND ARYL THIOESTERS OF INDOLE-3-ACETIC AND INDOLE-3-BUTYRIC ACIDS AND THEIR USE AS AUXIN GROWTH REGULATORS. Department of Agriculture.

SN 6-367,639. SYNTHESIS OF N-PHENYL AND N-SUBSTITUTED PHENYL INDOLYL-3-ACETAMIDE AND INDOLYL-3-BUTYRAMIDE AND RELATED ESTERS AND THIOESTERS AND THEIR USE AS AUXIN GROWTH REGULATORS. Department of Agriculture.

SN 6-391,064. ERYTHRO-9, 10-DIHYDROXYOCTADECAN-1-OL ACETATE A BOLL WEEVIL ANTI-FEEDANT. Department of Agriculture.

SN 6-326,996. CONTROL OF PARASITIC TICKS. Department of Agriculture.

SN 6-326,995. CONTROL OF PARASITIC TICKS. Department of Agriculture.

SN 6-345,455. EXTENDING PLATE EARTH ANCHOR AND METHOD. Department of Agriculture.

SN 6-322,332. ROD PRESS FRUIT HARVESTER. Department of Agriculture.

SN 6-347,129. RECIRCULATING WIPER FOR AGRICULTURAL CHEMICALS. Department of Agriculture.

SN 6-337,045. RADIATION-RESISTANT FLUOROAROMATIC ETHERS. Department of Agriculture.

SN6-337,044. SEGMENTED FIBER SAMPLER. Department of Agriculture.

SN 6-332,906. PROCESS AND APPARATUS FOR ENCAPSULATING ADDITIVES IN RESEALED ERYTHROCYTES FOR DISSEMINATING CHEMICALS VIA THE CIRCULATORY SYSTEM. Department of Agriculture.

SN 6-332,905. PROCESS AND APPARATUS FOR ENCAPSULATING ADDITIVES IN RESEALED ERYTHROCYTES FOR DISSEMINATING CHEMICALS VIA THE CIRCULATORY SYSTEM. Department of Agriculture.

SN 6-364,517. EXPRESSION OF RETROVIRAL MYC GENES IN HUMAN NEOPLASTIC CELLS. Department of Health & Human Services.

SN 6-304,571. A SIMIAN VIRUS RECOMBINANT THAT DIRECTS THE SYNTHESES OF HEPATITIS B SURFACE ANTIGEN. Department of Health & Human Services.

SN 6-414,904. BLOOD PRESSURE CUFF CALIBRATION SYSTEM. Department of Health & Human Services.

SN 6-423,203. REPAIR OF TISSUE IN ANIMALS. Department of Health and Human Services.

SN 6-100,843 (4,308,145). RELATIVELY THICK POLYCARBONATE MEMBRANES FOR USE IN HEMODIALYSIS. Department of Health & Human Services.

SN 6-208,029 (4,349,538). NUCLEASE-RESISTANT HYDROPHILIC COMPLEX OF POLYRIBOINOSINIC-POLYRIBOCYTIDYLIC ACID. Department of Health & Human Services.

SN 6-831,279 (4,350,984). METHOD OF POSITION FIXING ACTIVE SOURCES UTILIZING DIFFERENTIAL DOPPLER. National Security Agency.

SN 6-274,087 (4,351,130). RECESSIVE TALL-A FOURTH GENETIC ELEMENT TO FACILITATE HYBRID CEREAL PRODUCTION. Department of Agriculture.

SN 6-294,095 (4,351,857). NEW SURFACE IN CELLULOSIC FIBERS BY USE OF RADIOFREQUENCY PLASMA OF AMMONIA. Department of Agriculture.

SN 6-314,323 (4,352,827). ALTERED BRINING PROPERTIES OF PRODUCE BY A METHOD OF PRE-BRINING EXPOSURE OF THE FRESH PRODUCE TO OXYGEN OR CARBON DIOXIDE. Department of Agriculture.

SN 6-276,768 (4,352,930). BROMINE-CONTAINING 2,4-DIAMINOTRIAZINES. Department of Agriculture.

SN 6-790,988 (4,353,375). ACTIVITY MONITOR FOR AMBULATORY SUBJECTS. Department of Health & Human Services.

SN 6-302,007 (4,353,707). TEXTILE FINISHING AGENTS FROM REACTION PRODUCTS OF CARBAMATES AND GLUTARALDEHYDE. Department of Agriculture.

SN 6-254,318 (4,354,352). CATALYTIC COATING TO DIRECTLY GENERATE HEAT UPON THE SURFACE OF A HEAT DOME. Department of the Interior.

SN 6-153,074 (4,354,821). MULTIPLE STAGE CATALYTIC COMBUSTION PROCESS AND SYSTEM. Department of the Environmental Protection Agency.

SN 6-187,382 (4,355,051). DIRECT EXTRACTION PROCESS FOR THE PRODUCTION OF A WHITE DEFATTED FOOD-GRADE PEANUT FLOUR. Department of Agriculture.

SN 6-115,538 (4,355,727). INTERMEDIATE SUPPORT FOR A SKYLINE LOGGING SYSTEM. Department of Agriculture.

SN 6-199,781 (4,356,117). CHEMICAL MODIFICATIONS OF PROTEINS WHICH INDUCE NEW RECEPTOR SPECIFICITIES AND THEREFORE ELICIT NEW EFFECTS IN CELLS. Department of Health & Human Services.

SN 6-040,921 (4,356,164). DETECTION OF NON-A, NON-B HEPATITIS ASSOCIATED ANTIGEN. Department of Health & Human Services.

SN 6-245,463 (4,356,180). INSECT REPELLANTS. Department of Agriculture.

SN 6-098,460 (4,353,926). SODA CRACKERS. Department of Agriclture.

Reorganization of the Trademark Examining Operation

Introduction

The Trademark Examining Operation has reorganized its staff by adding two additional law offices (divisions) —namely, Law Office VII and Law Office VIII. A large number of examining attorneys and trademark classes have been transferred between law offices.

All clerical operations are still being handled by Law Offices I to VI for the time being. Instructions regarding access to trademark applications being examined in Law Offices VII and VIII may be obtained from clerical personnel in Law Offices I to VI.

A directory of examining attorneys is set forth below. The classes of goods and services assigned to each law office are also listed. All correspondence and inquiries pertaining to a trademark application should identify the current law office and the examining attorney handling the application.

The Trademark Examining Operation will obtain additional office space on the fourth floor of Crystal Plaza Building 2 in early 1983. At that time Law Offices VII and VIII will be relocated and will have their own clerical support.

DIRECTORY —TRADEMARK EXAMINING ATTORNEYS

(Separate telephone numbers are shown for Examining Attorneys who cannot be reached through their central Law Office number)

Tel. 557-3273
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Hooks, Arnold (557-3277)
Land, Ernest (557-5380
Quinn, Jeff
Sachs, Abram

LAW OFFICE CLASS ASSIGNMENTS

Law Office 1—International Class
16—Paper goods and printed matter
28—Toys and sporting goods

Law Office 2—International Class
21—Housewares and glass
29—Meats and processed foods
30—Staple foods
31—Natural agricultural products
32—Light beverages
33—Wines and spirits

Law Office 3 —International Class
9—Electrical and scientific apparatus
12—Vehicles
15—Musical instruments

Law Office 4 —International Class
(SERVICES)
35—Advertising and business
36—Insurance and financial
37—Construction and repair
38—Communication
39—Transportation and storage
40—Material treatment
41—Education and entertainment
42—Miscellaneous
(CERTIFICATION MARKS)
A. Goods
B. Services
200 COLLECTIVE MEMBERSHIP MARKS

Law Office 5 —International Class
14—Jewelry
18—Leather goods
22—Cordage and fibers
23—Yarns and threads
24—Fabrics
25—Clothing
26—Fancy goods
27—Floor coverings
34—Smokers articles

Law Office 6 —International Class
20—Furniture and Miscellaneous
(SERVICES)
35—Advertising and business
36—Insurance and financial
37—Construction and repair
38—Communication
39—Transportation and storage
40—Material treatment
41—Education and entertainment
42—Miscellaneous
(CERTIFICATION MARKS)
A. Goods
B. Services
200 COLLECTIVE MEMBERSHIP MARKS

Law Office 7 —International Class
1—Chemicals
2—Paints
3—Cosmetics and cleaning preparations
4—Lubricants and fuels
5—Pharmaceuticals

Law Office 8 —International Class
6—Metal goods
7—Machinery
8—Hand tools
10—Medical apparatus
11—Environmental control apparatus
13—Firearms
17—Rubber goods
19—Non-metallic building materials

Nov. 5, 1982.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

XEROX LICENSE OFFER

This notice is published pursuant to a CONSENT ORDER TO CEASE AND DESIST dated July 29, 1975, as modified Sept. 10, 1982, between Xerox Corp. and the Federal Trade Commission.

TERMS *contained in this notice are defined in the Consent Order. All interested parties should refer to that document for the definitions and additional details of Xerox' patent and know-how licensing obligations thereunder.* A copy of the Consent Order and a list of PATENTS licensed to Xerox which are subject to the provisions of paragraphs II and IV (C) (9) of the Order, if any, are available from Xerox upon written request. All such requests and any request relating to the licensing of PATENTS pursuant to the Consent Order should be made in writing and addressed to:

The Manager of Patent Licensing
Xerox Corp.
P.O. Box 1600
Stamford, Conn. 06904

Xerox shall, in accordance with the terms of the Consent Order, grant licenses under

(a) its ORDER PATENTS to make, have made, use ad vend OFFICE COPIER PRODUCTS under the terms of the Consent Order; and

(b) patents which are required to be licensed pursuant to the terms of paragraph X of the Consent Order, if any.

The following is a list of patents which is believed to include all of the PATENTS available for licensing in accordance with the terms of the Consent Order issued since the publication of the last notice by Xerox (1012 OG–55). Fuji Xerox, Ltd. patents which also make up part of the list are grouped separately. A copy of the classification index for the listed patents also appears at 1012 OG–55. Since the classification system is not restricted solely to OFFICE COPIER PRODUCTS, there are several patents included in the list to wich the Consent Order is not applicable.

CLASS: 1J1A

4,306,803.—MICROPROCESSOR AND CONTROL APPARATUS IN A PHOTOCOPIER. Dec. 22, 1981. CAN. 1121062, GRB. 1604762.

CLASS: 2A2

4,282,298.—LAYERED IMAGING MEMBER AND METHOD. Aug. 4, 1981. AUS. 452652, BEL. 763540, BRA. P17100874, CAN. 960073, CHL. 26781, EGR. 94761, FIN. 56906, FRA. 7107558, GRB. 1337228, GUA. 2431, ITL. 919107, MEX. 135819, NZL. 162882, PLP. 10503, PNM. 2442, SAF. 1218, SPN. 388583, STZ. 567286, SWD. 7102340, USR. 497783.

CLASS: 2B

4,304,829.—IMAGING SYSTEM WITH AMINO SUBSTITUTED PHENYL METHANE CHARGE TRANSPORT LAYER. Dec. 8, 1981.

CLASS: 5F

4,331,754.—SELF-SPACING TOUCHDOWN DEVELOPMENT METHOD. May 25, 1982.

CLASS: 5N4

4,297,427.—POLYBLEND COATED CARRIER MATERIALS. Oct. 27, 1981. SPN. 477166.

CLASS: 8A1A

4,309,957.—WICK FOR DISPENSING FUSER OIL. Jan. 12, 1982. CAN. 1114885, GRB. 1544319.

CLASS: 17H3

4,302,782.—REPRODUCTION SCANNING SYSTEM HAVING INTERMEDIATE STORAGE SYSTEM HAVING INTERMEDIATE STORAGE BETWEEN INPUT AND OUTPUT SCANNING STATIONS. Nov. 24, 1981. BEL. 864706, CAN. 1119240, GRB. 1601325.

CLASS: 18C2A

4,298,672.—TONERS CONTAINING ALKYL PYRIDINIUM COMPOUNDS AND THEIR HYDRATES. Nov. 3, 1981. SPN. 493002.

CLASS: 18C6B

4,293,632.—ATTRITION PROCESS FOR ALTERATION OF TONER PARTICLES CONTAINING CONDUCTIVE MATERIALS. Oct. 6, 1981.

CLASS: 32B

4,306,803.—MICROPROCESSOR AND CONTROL APPARATUS IN A PHOTOCOPIER. Dec. 22, 1981. CAN. 1121062, GRB. 1604762.

PATENT NOTICES

Certificates of Correction for the Week of Dec. 7, 1982.

Re. 30,962	4,302,574	4,335,549	4,347,333
D. 263,081	4,302,629	4,335,620	4,348,021
3,973,434	4,302,754	4,336,559	4,348,305
4,013,516	4,304,472	4,336,989	4,348,797
4,112,090	4,304,775	4,337,134	4,348,832
4,195,178	4,311,550	4,337,853	4,348,893
4,225,415	4,311,661	4,338,035	4,349,380
4,225,720	4,312,323	4,338,127	4,349,443
4,241,494	4,313,005	4,338,145	4,349,587
4,245,234	4,317,717	4,338,169	4,349,663
4,247,357	4,318,823	4,338,969	4,350,027
4,265,903	4,320,347	4,339,209	4,350,106
4,270,597	4,321,200	4,339,268	4,350,138
4,271,400	4,324,690	4,340,902	4,350,220
4,274,032	4,324,738	4,340,973	4,350,325
4,274,072	4,325,038	4,341,582	4,350,574
4,275,213	4,325,174	4,341,877	4,350,640
4,276,947	4,328,375	4,341,981	4,351,252
4,279,905	4,328,468	4,343,980	4,351,636
4,282,084	4,328,993	4,344,067	4,352,640
4,283,236	4,329,986	4,344,576	4,353,295
4,284,509	4,330,393	4,345,328	4,353,409
4,293,370	4,330,482	4,346,360	4,353,414
4,293,873	4,330,483	4,346,491	4,353,759
4,296,474	4,331,613	4,346,583	4,353,812
4,298,916	4,331,722	4,346,949	4,353,993
4,298,953	4,332,982	4,347,197	
4,301,019	4,335,174	4,347,322	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 16, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action

CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director 11-12-80
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.

GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director 7-20-81
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.

HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director 5-13-81
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.

COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director 4-27-81
Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.

SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director 1-18-81
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director 9-08-80
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.

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Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.

RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director 2-02-80
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ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director 11-26-79
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.

DESIGN, GROUP 290—KENNETH L. CAGE, Director 10-20-80
Industrial Arts; Household, Personal and Fine Arts.

MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director 5-01-81
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.

MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director 2-06-81
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.

AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director 2-13-80
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.

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GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director 8-22-80
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.

Expiration of patents: The patents within the range of numbers indicated below expire during October 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,209,369 to 3,214,766, inclusive

Plant Patents ..... Numbers 2,558 to 2,565 inclusive

PATENT EXAMINING CORPS
BRUCE D. DIETRICH, Acting Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner
CONDITIONS OF PATENT APPLICATIONS AS OF October 16, 1997

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 7, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,501
PROCESS OF PREPARING A POTASSIUM STANNATE-STANNIC OXIDE SOL TIN ELECTROPLATING SOLUTION

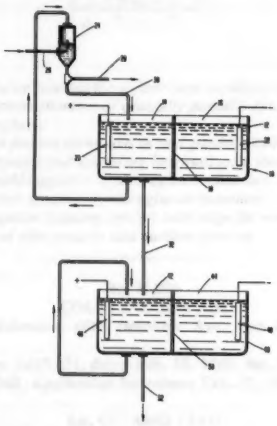
Richard Croft, Lakewood, Ohio

Continuation of Ser. No. 198,620, Oct. 20, 1980, abandoned. This application Nov. 17, 1981, Ser. No. 322,378

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—96

1 Sheets Drawing. 22 Pages Specification



A process for the production of a stannic oxide sol-potassium stannate tin plating solution is disclosed comprising the steps of:

anodically dissolving stannous tin in a potassium electrolyte such as potassium hydroxide to form potassium stannite in a first electrolytic cell including an anode compartment and a cathode compartment;

simultaneously preventing the potassium stannite from migrating from the anode compartment to the cathode compartment by interposing therebetween a permselective ion exchange membrane (e.g., an anionic permselective membrane);

oxidizing said potassium stannite to form a potassium stannate-containing solution by suitable means such as by contacting an oxygen-containing gas with the potassium stannite in a scrubbing tower;

electrodialytically transferring potassium cations of said potassium stannate-containing solution from an anode compartment of a second electrolytic cell to a cathode compartment of said second electrolytic cell while simultaneously preventing migration of tin anions from said anode compartment to the cathode compartment by maintaining a cation permselective dialytic membrane between the anode and the cathode; and

recovering a stannic oxide sol-potassium stannate solution from the anode compartment of said second electrolytic cell.

T102,502
GAP ELIMINATION IN MEMORY DATA ACCESSION

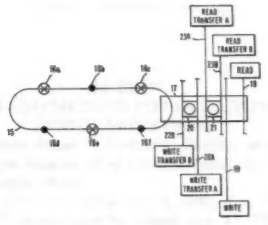
Clifton D. Cullum, Jr., Lincoln Rd., Putnam Valley, N.Y. 10579

Continuation of Ser. No. 44,894, Jun. 4, 1979, abandoned, which is a continuation of Ser. No. 877,646, Feb. 14, 1978, abandoned, which is a continuation of Ser. No. 707,394, Jul. 21, 1976, abandoned. This application May 5, 1981, Ser. No. 260,620

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—16

2 Sheets Drawing. 16 Pages Specification



This invention relates to the reduction of gaps in the flow of data accessed in a synchronous serial storage serial communicating data processing memory by the provision of access storage capability at each storage location. The problem to which the invention is directed is the fact that in a synchronously driven array of the type having a number of data storage locations that are accessed by a communicating channel linking all the storage locations in series, the information flow in the communication channel will be limited by the time required for the proper point to be moved around each storage location and the resulting gaps in the data will effect the speed of response. The invention takes the bits to be transferred as they are synchronously propagated around one loop and holds them as the data is synchronously propagated around the other loop until the insertion point arrives. The invention provides a specific size buffer or intermediate storage loop that can hold the amount of data being transferred until the timing is accommodated. The intermediate loop buffer must be big enough for the transferring data but it should not be much larger or there will still be a gap in the data in the communicating loop in proportion to the amount the intermediate loop is oversize.

T102,503
ORGANO-TITANATE GELLATION OF EPOXY RESIN COATED ARTICLES

Leonard B. Simmonds, 125 Kelvington Dr., Monroeville, Pa. 15146; James D. B. Smith, 104 Briaridge Dr., Turtle Creek, Pa. 15145, and Richard L. Oblich, 108 Timber La., Trafford, Pa. 15085

Continuation of Ser. No. 967,808, Dec. 8, 1978, abandoned. This application Dec. 16, 1981, Ser. No. 331,429

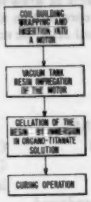
Int. Cl.³ B05D *5/12*

U.S. Cl. 427—116

1 Sheets Drawing. 24 Pages Specification

An article, such as a mica wrapped coil, a dynamo-electric machine component containing mica wrapped coils, or a metal substrate, is insulated by: (A) applying wet epoxy resin to the article, (B) contacting the wet epoxy resin with a titanate solution, for a time effective to form a resin impervious, gelled

epoxy skin on the surface of the epoxy resin, where the titanate solution consists essentially of organo-titanate and an organic,


COIL BUILDING WRAPPING AND INSERTION INTO A MOTOR
VACUUM TANK RESIN IMPREGATION OF THE MOTOR
GELLATION OF THE RESIN BY IMMERSION IN ORGANO-TITANATE SOLUTION
CURING OPERATION

non-polar solvent, where the weight ratio of organo-titanate-:organic non-polar solvent is from 1:2.5 to 1:99, and (C) curing the epoxy resin.

REISSUES

DECEMBER 7, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

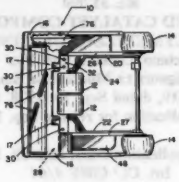
Re. 31,095
AGITATOR CHAMBER

Donald B. Tschudy, Stark County, Ohio, assignor to The Hoover Company, North Canton, Ohio

Original No. 4,178,653, dated Dec. 18, 1979, Ser. No. 872,646, Jan. 26, 1978. Application for reissue Mar. 23, 1981, Ser. No. 246,285

Int. Cl.³ A47L *5/30*

U.S. Cl. 15—383 **8 Claims**



5. An agitator housing for a floor care appliance including;

(a) an agitator chamber of generally partially cylindrical internal periphery,

(b) a ledge formed along and in said partially cylindrical internal periphery and extending longitudinally therealong,

(c) a rotatable agitator in said agitator chamber,

(d) a suction opening in said agitator chamber,

(e) said agitator rotating against said ledge for moving air and entrained dirt towards said suction opening.

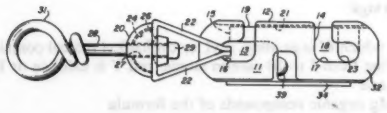
Re. 31,096
COUPLING DEVICE

James R. Johnston, 6665 Brooklyn Ave., San Diego, Calif. 92114

Original No. 3,427,691, dated Feb. 18, 1969, Ser. No. 485,736, Sep. 8, 1965. Application for reissue Feb. 17, 1981, Ser. No. 235,024

Int. Cl.³ A44B *13/00*

U.S. Cl. 24—374 **4 Claims**



1. A coupling device comprising:

a flat elongated *integral metallic* holder member, [said flat elongated holder member having first and second parallel sides joined at one edge thereof,] *consisting of substantially flat metallic material folded on itself along a fold line so as to define first and second parallel sides joined to each other only at the folded edge defined by said fold line,* said first and second sides defining an elongated slot;

at least one opening *extending* through said [one] *folded* edge *adjacent one end* of said [flat elongated] holder member, [adjacent one end thereof;] at least one aperture *extending* through said first and second parallel sides [of said flat elongated holder member adjacent another end thereof;] *adjacent the other end of said holder member;* and

a flat elongated *integral* inner *metallic* member consisting of *substantially flat metallic material folded on itself along a fold line so as to define parallel* first and second sides [joined at one edge thereof, said first and second sides being] spring-loaded *outwardly* with respect to each other [from moving apart when held in parallel relationship] *when said inner member is positioned within said holder member, with the spring loaded sides of the former* for effecting a *resilient* frictional engagement with [said flat elongated holder member, said inner member being slidably mounted within said flat elongated inner member having an extension on one end thereof for opening and closing said one opening] *the inner surfaces of the parallel sides of the latter, said inner member being slidable within the confines of said holder member and having an extension at one end thereof for opening and closing said one opening.*

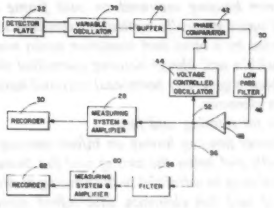
Re. 31,097
APPARATUS AND METHOD FOR DETECTON OF BODY TISSUE MOVEMENT

Ran Vas, Encino; James S. Forrester, Malibu, and George A. Diamond, Los Angeles, all of Calif., assignors to Cardiokinetics, Inc., Seattle, Wash.

Original No. 4,182,315, dated Jan. 8, 1980, Ser. No. 817,708, Jul. 21, 1977. Application for reissue Jun. 17, 1980, Ser. No. 160,384

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—687 **82 Claims**



34. A method of detecting and diagnosing abnormalities in body tissue utilizing cardiokymographic techniques, said method comprising:

(a) positioning a detector close to the tissue of a person being tested and over a selected segment of said tissue,

(b) passing current through said detector to generate an electric field such that the generated electric field will be close to and may extend to the surface of the person being tested,

(c) sensing a change in capacitance of the detector which results from tissue movement, and providing a low frequency signal at least partially representative of said tissue movement,

(d) processing the signal representative of said tissue movement and depicting a portion of said signal to represent tissue movement,

(e) generating a signal representative of the timing of a cycle of the tissue which is moving and which is independent of the signal representative of the tissue movement,

(f) depicting the signal representative of timing to thereby provide timing with respect to the tissue movement, and

(g) analyzing said depicted portion of said signals to determine any abnormality in the tissue movement.

Re. 31,098

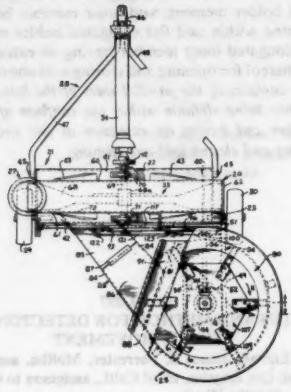
FEED MATERIAL HANDLING APPARATUS

Aquila D. Mast, and J. Paul Lyet, II, both of Lancaster, Pa., assignors to Sperry Corporation, New Holland, Pa.

Original No. 3,968,997, dated Jul. 13, 1976, Ser. No. 2,017, Jan. 12, 1970. Continuation of Ser. No. 877,196, Feb. 13, 1978, abandoned. Application for reissue Jul. 21, 1980, Ser. No. 170,433

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—71 6 Claims



13. Forage blower apparatus adapted to initially break up clumps of crop material, then throw the disintegrated crop material into a blower, and then blow the crop material upwardly through a pipe to a silo or the like, said apparatus comprising, in combination:

a. a support frame,

b. a blower housing mounted on said frame and including spaced apart generally vertically extending side walls interconnected by a band and transition outlet member,

c. a fan within said blower housing journalled thereon for rotation about a generally horizontal axis and having crop engaging fan elements,

d. a drive for rotating said fan,

e. said blower housing having an infeed opening in one of said side walls and below the axis of said fan through which crop material may be admitted to the housing in the path of movement of said fan elements, said infeed openings and said transition outlet member being angularly spaced from each other relative to said horizontal axis,

f. a hopper comprising a bottom wall and crop confining wall means extending upwardly from said bottom wall to define an initial feed opening for receiving crop material dropped in the hopper, said hopper being in operative communication with said infeed opening,

g. crop breaking and metering means comprising a rotor mounted adjacent said bottom wall of said hopper and journalled on a generally vertically extending axis,

h. said rotor having a plurality of angularly spaced blades thereon extending in a radial direction, each blade having a height substantially less than said crop confining wall means whereby each blade engages and impels a bottom layer of crop material in said hopper and each blade traveling in a horizontal plane that generally passes through said housing infeed opening,

i. said initial feed opening being open upwardly to permit crop material to be dumped directly onto a substantial portion of said rotor blades under conditions where said rotor is rotated about said vertically extending axis,

j. drive means operable to rotate said rotor at sufficient speed to cause clumps of crop material engaged by said rotor blades to be broken up and then thrown horizontally and radially in an air-borne state by said blades, and

k. feed material wall transfer means cooperative with said rotor to guide the crop material broken up and thrown by said rotor blades from said hopper and into said blower housing through said infeed opening in said side wall of said blower housing, said wall transfer means extending at an acute angle to said blower housing side wall when viewed from above and in the direction of rotation of said fan elements at said infeed opening,

l. the velocity imparted to the crop material by said rotor blades facilitating the subsequent engagement of the material by said fan elements for discharge upwardly to the silo.

Re. 31,099

CATALYSTS AND CATALYST COMPONENTS FOR POLYMERIZING OLEFINS

Umberto Scata'; Luciano Luciani, and Pier C. Barbe', all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Original No. 4,115,319, dated Sep. 19, 1978, Ser. No. 724,361, Sep. 17, 1976. Application for reissue Sep. 16, 1980, Ser. No. 187,734

Claims priority, application Italy, Sep. 19, 1975, 27438 A/75

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B 12 Claims

1. Solid catalyst-forming components for use in preparing a catalyst for polymerizing ethylene and/or alphaolefins, comprising compounds containing Ti, Mg and halogens, in which the halogen/Mg atomic ratio is at least 1, said component being prepared by reacting [a tetravalent Ti compound selected from the group consisting of Ti tetrahalides, Ti tetraalcoholates, Ti haloalcoholates, and Ti tetraamides,] $TiCl_4$ with the solid halogenation product containing halogen atoms bonded to Mg atoms obtained by reaction of a halogenating agent, different from the halogenated Ti compounds, with a Mg compound selected from the group consisting of

(a) organic oxygenated Mg compounds of the formula

XMgOR

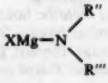
in which R is an alkyl, aryl, cycloalkyl or acyl radical containing from 1 to 20 carbon atoms or —OR forms an enolate radical containing from 1 to 20 carbon atoms, and X is OR, halogen $(SO_4)_{\frac{1}{2}}$, —OH, $(CO_3)_{\frac{1}{2}}$, $(PO_4)_{\frac{1}{3}}$, carboxylate or an alkyl, aryl, or cycloalkyl radical containing from 1 to 20 carbon atoms;

(b) organometallic compounds of the formula

YMgR'

in which R' is an alkyl, aryl, or cycloalkyl radical containing from 1 to 20 carbon atoms, and Y is halogen or R'; and

(c) Mg organic compounds of the formula



in which R'' and R''' are hydrogen or alkyl or aryl radicals containing from 1 to 20 carbon atoms; and X is

or has the same significance as in (a); said catalyst component being further characterized in that *said reaction between the $TiCl_4$ and the solid halogenation product of the Mg compounds (a), (b) or (c) is carried out in liquid*

$TiCl_4$ in a quantity corresponding to an atomic ratio Ti/Mg higher than 1, at a temperature comprised between 20° C. and 150° C., in the presence of an electron-donor as such, or of an electron-donor compound prereacted with the solid halogenation product, and then separating the solid product from the unreacted $TiCl_4$, and in that it contains an electron-donor in a quantity greater than 0.1 but not greater than 1.0 mole per g-atom of Mg.

PLANT PATENTS

GRANTED DECEMBER 7, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,961

MINIATURE ROSE PLANT—MEIJIDIRO VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 2, 1981, Ser. No. 269,761
Claims priority, application France, Jun. 5, 1980, 80 2673
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant which originated as a bud mutation of the Meijikatar variety, substantially as shown and described, having azalea pink double flowers instead of the vermillion red double flowers exhibited by the Meijikatar variety.

4,962

DISTINCT VARIETY OF STREPTOCARPUS NAMED AURORA

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 5, 1980, Ser. No. 204,351
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of streptocarpus substantially as herein shown and described.

4,963

AFRICAN VIOLET NAMED PATRICIA

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan-American Plant Company, Parrish, Fla.

Filed Apr. 9, 1981, Ser. No. 252,616
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new African Violet cultivar, substantially as herein shown and described, characterized by its profuse production of large, dark blue flowers of single and semi-double form borne on upright stems to cluster as a bouquet above the plant foliage.

PLANT PATENTS

GRANTED DECEMBER 2, 1902

Specifications for new patents are usually issued one week after the date of payment of the final fee.

PATENTS

GRANTED DEC. 7, 1982

ERRATA

For CLASS	See PATENT NO.
374–004	4,362,057
604–165	4,362,156
604–280	4,362,163
114–353	4,362,519
419–005	4,362,563
422–183	4,362,632
548–557	4,362,667
525–426	4,362,827
564–479	4,362,886
378–048	4,362,935
378–150	4,362,947

PATENTS

GRANTED DEC. 7, 1982

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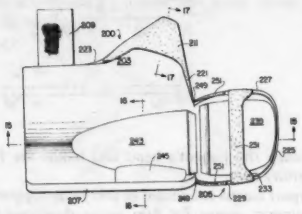
PATENTS

GRANTED DECEMBER 7, 1982

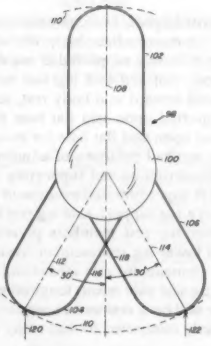
GENERAL AND MECHANICAL

4,361,912
KARATE PROTECTIVE EQUIPMENT
Lawrence E. Arthur, 114 Middleboro Pl., Lynchburg, Va. 24502
Filed Sep. 19, 1980, Ser. No. 189,102
Int. Cl.[3] A41D *13/08*
U.S. Cl. 2—18 **26 Claims**



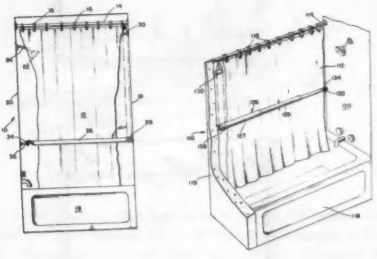
1. Protective equipment for use in karate and the like comprising:
(a) a first, outer, relatively large formed, foam material formed in the shape of a glove having inner and outer surfaces for conforming to and protecting the hand of the wearer, said first foam material being relatively soft; and
(b) a second inner relatively harder formed foam material secured to the inner surface at areas of impact.

4,361,913
INTRAOCULAR LENS
Donald A. Streck, 1725 Promenade, #701, Santa Monica, Calif. 90401
Filed Apr. 3, 1981, Ser. No. 250,612
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **7 Claims**



1. An intraocular lens adapted to compress in width for insertion through an incision opening of minimal width and having a degree of longitudinal compressability for safety and size adaptation, said lens comprising:
(a) a lens body portion;
(b) at least three support members connected to said body portion and extending radially outward therefrom with no two of said members having a common longitudinal axis, at least one of said support members being disposed adjacent one other of said support members in a position of angular relationship thereto of between 40° and 90°, the adjacent edges of said one member and said one other member overlapping one another at an angle of between 40° and 90° adjacent said lens body portion, said one member being biased to said angular position and further being deformable towards said one other member to a position wherein the combined width of said one member and said one other member is substantially no greater than the width of said lens body portion.

4,361,914
SHOWER CURTAIN HOLDER
Earl P. Oliver, R.R. #1, Box 15, Scottsville, Ky. 42164
Continuation of Ser. No. 118,970, Feb. 5, 1980, abandoned. This application Feb. 10, 1982, Ser. No. 347,538
Int. Cl.[3] A47K *3/22*
U.S. Cl. 4—605 **16 Claims**

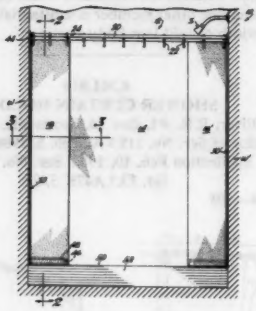


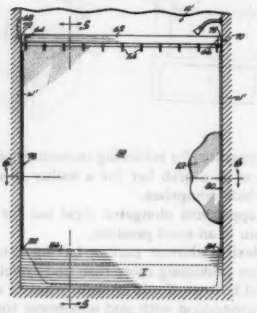
1. An apparatus for inhibiting movement of a shower curtain and for use as a grab bar for a bather in a shower bathing facility which comprises:
(a) an uppermost elongated rigid bar for maintaining said curtain in an erect position;
(b) a flexible shower curtain having a top and a bottom portion possessing more than one eyelet attached thereto at said bottom of said curtain, wherein said eyelets are in interconnection with said uppermost rod;
(c) a second elongated rigid bar means adapted to be disposed substantially parallel to said uppermost elongated rigid bar and intermediate said top and bottom of said curtain, wherein said second elongated rigid bar means is secured to said shower bathing facility by a pivot means permanently secured to said shower bathing facility at at least one extreme of said rigid bar means when said second elongated bar means is in position where it traverses the entire width of said curtain and of said shower bathing facility; and
(d) a holding means permanently secured to said shower bathing facility disposed above and substantially in a vertical plane with said pivot means to hold said second elongated rigid bar in a substantially vertical position when said second elongated rigid bar is not in use in position where it traverses the entire width of said curtain and of said shower bathing facility.

4,361,915
SHOWER CURTAIN ASSEMBLY
Barry L. Siewert, 6411 Waltonway, Tampa, Fla. 33610
Filed Jan. 5, 1981, Ser. No. 222,295
Int. Cl.[3] A47K *3/22, 3/08, 3/14*
U.S. Cl. 4—608 **4 Claims**

1. An improved shower curtain assembly for use as an enclosure for shower stalls and bath tub and shower combinations comprising, a pair of spaced apart parallel horizontally disposed shower rods installed in an upper spanning relation to an entrance opening into the shower stall or tub and shower

combination, an outer shower curtain suspended from an outer rod of said pair and an inner shower curtain slidably suspended from an inner rod of said pair, means to secure a thickened vertical edge of said outer curtain formed on a side thereof in an opposed relation to the location of a conventional shower head installation to an existing wall of the entrance opening in a water tight relation thereto, and wherein said means to secure





comprises a vertical strip fixed to the existing wall and defining an interior vertical recess along its vertical length to slidably receive said thickened vertical edge, and a slot reduced in width relative to said thickened edge, opening into said recess to permit sliding passage of said thickened end into said recess, and weight means secured in a hem in a bottom edge of said outer curtain for engagement with a top edge of an existing outer rim of the stall or bath tub.

4,361,916
PEDIATRIC TABLE-CHAIR
William L. McDaniel, 6711 SW. 26th Ct., Miramar, Fla. 33023
Filed Apr. 18, 1980, Ser. No. 141,308
Int. Cl.³ A61G *7/00, 7/06*
U.S. Cl. 5—62 **8 Claims**

1. A pediatric table-chair comprised of:

a base;

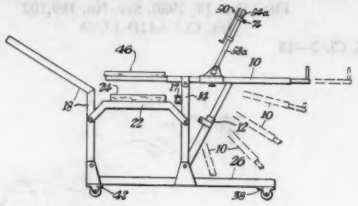
at least one rigid support member each said rigid support member with a lower end connected to said base;

a body support platform including an upper portion and a bottom portion, said body support platform pivotally connected to said rigid support member to move said body support platform between a horizontal position and a substantially vertical position;

an adjustable support means, the lower end of said support means connected to said base, said support means for supporting said body platform in various positions;

a utility tray connected to said rigid support member;

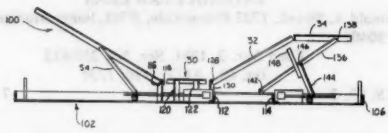
removable headrest support means connected to said body support platform, said headrest support means removable to provide functional access to said utility tray when a patient is supported facing said body support platform



while the patient's head and hands are free to use said utility tray;

support means connected to said body support platform, said support means for preventing downward movement of the trunk of the user when said body support platform is in a downwardly sloping position.

4,361,917
PORTABLE ORTHOPEDIC BED
Harold L. Wilson, Rte. 2, Box 78C, Pevely, Mo. 63070
Filed Apr. 3, 1980, Ser. No. 136,803
Int. Cl.³ A61G *7/00, 7/06*
U.S. Cl. 5—68 **5 Claims**



1. A portable orthopedic bed comprising a flat base, a frame-like back rest, an intermediate body rest and a leg rest, said back rest being pivotably supported at one end above said base toward said body rest and said leg rest being pivotably supported at one end toward said body rest, said aforementioned rests being supported upon said flat base and separate motor means supported upon said flat base for pivoting said back rest and leg rest to inclined positions of adjustment, said flat base being of rigid construction and supporting the remaining portion of the bed in super-imposed position in order that said flat base may rest on a flat support, said leg rest being comprised of upper and lower leg rest members pivotally connected together and said lower leg rest member having means connecting it to roller elements by axle means and motor means provided for moving said axle means longitudinally of said base to raise and lower said back rest and a lower end of said lower leg rest being directly connected to said roller elements.

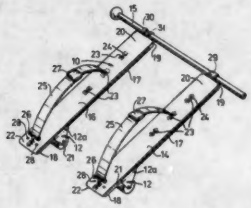
4,361,918
DEVICES AND METHOD FOR HANDLING A PERSON ON A BASE
Kjell Roisaeth, Fossekollen, 5250 Lonevag, Norway
Filed Jun. 22, 1979, Ser. No. 51,180
Claims priority, application Norway, Jun. 22, 1978, 782170
Int. Cl.³ A61G *7/08, 7/06, 7/10*
U.S. Cl. 5—81 R **7 Claims**

1. A device for handling a person on a body-supporting base comprising a flat, board-shaped support means adapted for endwise manual insertion between said base and said person transversely of said person, said support means embodying

structure engageable with means for fastening said person to said support means,

said device further comprising elongate connecting means mounted at an end of said support means opposite that designed for manual insertion and permitting displacement of said support means thereon, the device being such that lifting of said elongate connecting means causes pivoting of said support means about a first pivotal axis at its manually inserted end,

said support means being made up of two separate arms capable of being displaced towards and away from each other on said elongate connecting means and of being pivoted simultaneously on lifting the latter about their respective manually inserted ends,



said elongate connecting means comprising a rod and fastening means for detachably interconnecting said arms and said rod after having individually arranged said arms at predetermined locations between said base and said person, the device being in the form of a substantially rigid and U-shaped lifting means upon such interconnection, said fastening means comprising a sleeve-shaped guide means for axially displaceable reception of said rod and a pair of oppositely directed and spaced apart hook means for receiving said rod in a slopingly sideways and subsequent axially displaceable manner, said guide means and said hook means being mounted on respective ones of the non-manually insertable ends of said arms.

4,361,919

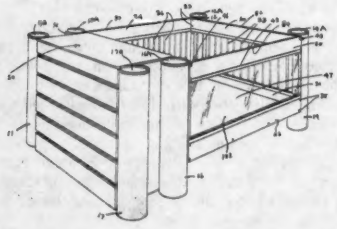
CONVERTIBLE CHILD'S BED

James R. Hull, 148 S. Westgate Ave., Los Angeles, Calif. 90049

Filed Nov. 10, 1980, Ser. No. 205,103

Int. Cl.³ A47D *7/01*

U.S. Cl. 5—93 B **8 Claims**



1. A convertible child's bed comprising: four upright corner posts; means including a first pair of elongated rectangular rails removably secured in vertical uniplanar relationship to a first two of the upright corner posts in vertical spaced relationship to form one side of the bed; means including a second pair of elongated rectangular rails removably secured in vertical uniplanar relationship to the other two of the upright corner posts in vertical spaced relationship to form the other side of the bed; first and second elongated mattress support members of essentially the same length as said elongated rectangular rails removably attached to the respective lower elongated rectangular rails of the first and second pairs; and said child's bed being convertible into a youth bed in which the upper elongated rectangular rails of each pair are secured to the corresponding upright corner posts in respective end-to-end abutting relationship with the corresponding lower elongated rectangular rails to permit the bed to be expanded to essentially twice its original length, and said elongated mattress supporting members being attached to the respective abutting rails in bridging relationship therewith to secure the abutting rails to one another, and also to serve as a mattress supporting means.

4,361,920

COMBINED GAS LIGHTER-BOTTLE OPENER

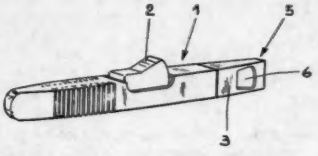
Paolo Zanni, Florence, Italy, assignor to FIAP S.r.l., Bologna, Italy

Filed Sep. 19, 1980, Ser. No. 188,901

Claims priority, application Italy, Sep. 28, 1979, 4937/79[U]

Int. Cl.³ B25F *1/00*

U.S. Cl. 7—151 **6 Claims**



1. In combination, a gas lighter comprising gas lighter means mounted on an elongated body, bottle opener means mounted on said elongated body, and said gas lighter elongated body comprising handle means for said bottle opener means affording substantial leverage to a user using said bottle opener means.

4,361,921

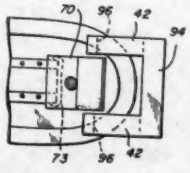
METHOD FOR STIFFENING SHOE INSOLES

Leo F. Stanton, Newburyport, Mass., assignor to Bush Universal Inc., Woburn, Mass.

Division of Ser. No. 968,830, Dec. 12, 1978, Pat. No. 4,287,628. This application Oct. 6, 1980, Ser. No. 194,376

Int. Cl.³ A43D *21/00, 31/00;* A43B *13/42*

U.S. Cl. 12—146 S **3 Claims**



1. A method for applying a strip of activatable, curable material to a surface of a shoe assembly to form a stiffener in situ on the surface, the strip being flexible and deformable prior to curing thereof, said method comprising:

placing said strip of material on the surface of the shoe assembly and urging the strip into engagement with the surface of the shoe assembly;

applying a presser member to a selected portion of the strip in a manner which overlaps said portion of the strip and an adjacent region of said shoe assembly surface to press the edge portion of the strip into a tapered, feathered configuration while the strip is retained in said position on said surface; and

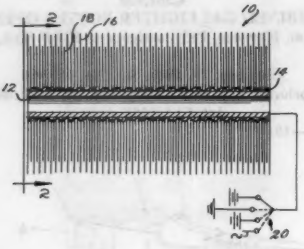
thereafter activating the strip to effect curing thereof and in a manner in which presser means does not interfere with curing or activation of the material.

4,361,922

CLEANING BRUSH FOR ELECTROSTATIC COPIERS, PRINTERS AND THE LIKE

Donald W. Karal, Rochester, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Jan. 6, 1981, Ser. No. 222,878
Int. Cl.³ G03G *21/00*
U.S. Cl. 15—1.5 R **17 Claims**



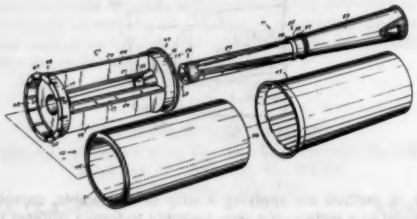
1. A cleaning brush for removing particles from a photosensitive surface, some of which particles are electrically conductive, comprising a first type of bristles of a selected length made from electrically non-conductive material and a second type of bristles which are shorter than said bristles of said selected length and which are made of an electrically conductive material, both types of said bristles being formed with a fabric base with the bristles of one type intermingled with the bristles of the other type, said fabric base being mounted on a support means, said support means being electrically conductive and switch means being provided for changing the electrical polarity of said support means between positive, neutral and negative polarity.

4,361,923

LINT REMOVER

Nicholas D. McKay, Grand Blanc, Mich., assignor to Helmac Products Corporation, Flint, Mich.

Filed Aug. 6, 1981, Ser. No. 290,786
Int. Cl.³ A47L *25/00*
U.S. Cl. 15—104 A **8 Claims**



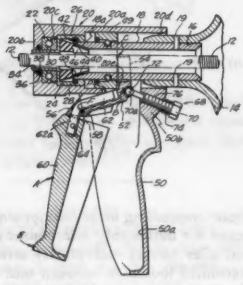
1. In a lint remover assembly, the combination comprising:
an elongate handle support member, said handle support member having a handle portion and a roller cylinder-engaging shaft portion extending axially from said handle portion, said handle support member provided with a central locking finger-engaging annular lock slot, said roller cylinder-engaging shaft portion provided with an outer roller cylinder-engaging cover lock socket at the end thereof for locking engagement with a cover member; and
an adhesive tape roll sleeve-engaging roller cylinder provided for selective snap lock engagement with said shaft portion so as to be fixed against axial displacement with respect thereto, said adhesive tape roll sleeve-engaging roller cylinder rotatably journaled on said annular lock slot and the outer annular surface of said outer roller cylinder-engaging cover lock socket so as to be selectively rotatable around said shaft portion.

4,361,924

GRIP HANDLE CHUCK

Lawrence F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342

Filed Jun. 24, 1981, Ser. No. 276,952
Int. Cl.³ B08B *9/02*
U.S. Cl. 15—104.3 SN **7 Claims**



1. A sewer cleanout tool, comprising:
(a) an elongated coiled spring;
(b) a spring housing adapted to contain said coiled spring when not in use, said housing having an opening at one side thereof for the passage of said coiled spring; said housing axially of the opening, said spindle having a wedge shaped face;
(d) a tubular chuck body housing surrounding said spindle;
(e) a thrust bearing mounted within said chuck body housing for reciprocal movement therewithin, said thrust bearing being adapted to rotatably support said spindle and to impart axial movement thereto;
(f) a contractable collet chuck carried within said chuck body housing, said chuck having a wedge shaped face adapted to mateably engage said wedge shaped face of said spindle upon relative axial movement between said spindle and said chuck to contract said chuck;
(g) actuating means for imparting relative movement between said spindle and said collet chuck to cause said chuck to contract, said actuating means comprising a handle formed as a part of said chuck body housing and extending radially thereof in the region of said opening, said handle having an elongated channel-shaped forwardly facing opening therein, said actuating means further comprising a manually operable lever means for causing movement of said thrust bearing, said lever means being partially receivable in said channel shaped opening of said handle and including:
(1) a first portion having an inner end engageable with said thrust bearing and an outer end projecting forwardly of said handle said first portion having an aperture formed therein;
(2) first pivot means pivotally mounting said first portion of said lever means proximate said opening in said spring housing;
(3) a second portion operably associated with said first portion and movable with respect thereto and also with respect to said handle;
(4) interconnecting means for interconnecting said first and second portions of said lever means said means

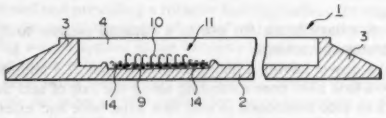
comprising a curved rigid member connected at one end to said second portion and extending upwardly through said aperture in said first portion toward said tubular chuck body for pressural engagement therewith proximate the free end of said means to define a second pivot point upon movement of said second portion toward said handle.

4,361,925

MAT-BASE ASSEMBLY

Yosuke Yamamoto, Toyonaka, and Kinichi Sasagawa, Takatsuki, both of Japan, assignors to Duskin Franchise Co., Ltd., Osaka, Japan

Filed Jan. 21, 1981, Ser. No. 226,884
Claims priority, application Japan, Aug. 27, 1980, 55-117041
Int. Cl.³ A47L *23/22*; B32B *3/06*; A47L *23/26*
U.S. Cl. 15—217 **7 Claims**



1. A mat-base assembly which comprises a base comprising a sheet, a picture-frame-like projection formed on the periphery of the sheet and a mat-containing portion formed on the inner side of said peripheral projection, said sheet, peripheral projection and mat-containing portion being integrally formed from an elastomeric polymer, a dust-controlling mat contained in said mat-containing portion and a temporary anchoring mechanism for anchoring detachably said base and mat at a plurality of points on the peripheral edge of the sheet, wherein an anchoring element comprising engaging pieces implanted on a base fabric is fixed to said base, a fiber loop element engageable with said engaging pieces is sewn to said mat and the peripheral portion of the anchoring element is fusion-bonded to the base sheet at a temperature higher than the softening point of the polymer constituting the base sheet but lower than the melting or softening point of the base fabric of the anchoring element so that the engaging pieces in the peripheral portion are crushed or stuffed toward the base sheet while in the remaining central portion of the anchoring element, the engaging pieces are left as they are, whereby the mat can be securely but detachably anchored to the base when the mat is seated within said mat-containing portion with the engaging pieces of the anchoring element engaging the fiber loop element.

4,361,926

CAUTERY CLEANING DEVICE

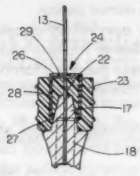
Claire Brush, 631 N. 62nd St., Omaha, Douglas County, Nebr. 68132; Keith M. McCormick, 1822 N. 100th St., Omaha, Douglas County, Nebr. 68114, and B. J. Moor, 2029 S. 146 Cir., Omaha, Douglas County, Nebr. 68144

Filed Jan. 19, 1981, Ser. No. 226,296
Int. Cl.³ A61B *17/32*
U.S. Cl. 15—236 R **9 Claims**

1. A device for cleaning the blade of a cautery pencil, comprising:

means for scraping foreign matter from the cautery blade; and

means of rubber-like material surrounding the blade for mounting the device onto the blade, guiding the scraping means longitudinally along the blade and supporting the scraping means against the blade in order that the angles



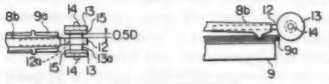
of contact of the scraping means against the cautery blade may be dexterously controlled.

4,361,927

DEVICE FOR PREVENTING VIBRATION OF WINDSHIELD WIPER

Kazuma Matsui, 91, Togocho, Toyohashi-shi, Aichi-ken, Japan; Takashi Kurahashi; Masahiko Suzuki, both of Aichi, and Kiyoshi Kawaguchi, Kariya, all of Japan, assignors to Kazuma Matsui, Toyohashi, Japan

Filed May 21, 1981, Ser. No. 266,044
Claims priority, application Japan, Jul. 2, 1980, 55-90319
Int. Cl.³ B60S *1/04*
U.S. Cl. 15—250.42 **11 Claims**



1. A device for preventing the vibration of a windshield wiper comprising a wiper blade including a resilient member formed as of rubber for wiping the surface of a windshield connected to the forward end of a wiper arm driven by a wiper motor and moved in swinging movement through a linkage, such device comprising:

weight means mounted at one end of a holder and comprising a weight having two ends each secured to one of opposite ends of a pin extending through the holder and separated from each other a suitable distance for the holder and the weight to move relative to each other between the two ends of the pin.

4,361,928

MUFFLED EXHAUST SYSTEM FOR HOT WATER VACUUM EXTRACTION MACHINE

Rainer R. Schulz, Sparks, Nev., assignor to Parise & Sons, Inc., Sparks, Nev.

Filed Jul. 1, 1981, Ser. No. 279,386
Int. Cl.³ A47L *9/00*
U.S. Cl. 15—326 **5 Claims**

5. In a hot water vacuum extraction machine including:

an imperforate, generally parallelepiped casing,

a recessed top wall for said imperforate casing,

a cylindrical dump tank removably mounted within said recess and having its bottom wall flush with the recessed bottom wall of said imperforate casing,

a cylindrical vacuum pump assembly fixedly mounted to the interior of said casing and underlying said dump bucket,

said vacuum pump assembly including a cylindrical pump casing defining a plenum chamber and bearing a rotatable suction fan within said casing,

said vacuum pump casing including a scroll portion terminating in a tangential tubular discharge pipe of reduced

diameter with respect to the cross-sectional diameter of said scroll casing portion,

said vacuum pump assembly including an electrical motor beneath said plenum chamber and said scroll and including a cylindrical motor casing,

said electric motor operatively coupled to said suction fan for driving said fan in rotation and producing a vacuum pressure within said plenum chamber,

means for sealably transmitting said vacuum pressure to said dump tank,

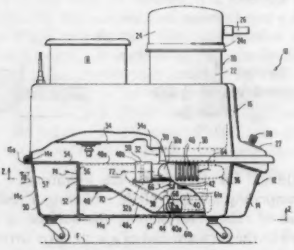
cooling air inlet openings within said cylindrical motor casing adjacent said scroll pump casing section,

cooling air outlet openings within said motor casing at the end of said motor casing remote from said plenum chamber,

the improvement comprising:

means including horizontal and vertical baffle plates, defining an elongated enlarged sound muffling and air expansion chamber within said machine casing, and

a unitary tubular exhaust duct comprising a bifurcated member including a main duct section having a large diameter portion remote from said tangential exhaust pipe leading from said scroll portion of said pump housing, and



a smaller diameter portion proximate thereto, sized to the diameter of said exhaust pipe and being sealably connected thereto to form a venturi in the area of intersection of the exhaust pipe and the small diameter portion of said exhaust duct, and

an exhaust duct branch having one end opening to the large diameter portion of said exhaust duct main branch, downstream of said venturi,

said exhaust duct branch at the other end terminating in a cylindrical shroud surrounding said motor housing and being spaced radially thereof to form an annular passage for leading cooling air passing through said motor into said branch duct for aspiration into the main stream of air emanating from the exhaust pipe of the vacuum pump casing and passing through said exhaust duct,

and wherein the large diameter end of said exhaust duct opens to the interior of the sound muffling and air expansion chamber,

and openings within said machine casing to the interior of the air muffling and expansion chamber;

whereinby, noise reduction is accomplished by mixing the exhaust air with motor cooling air and letting it expand into the sound muffling and air expansion chamber prior to exhausting out of said casing through said casing openings.

4,361,929

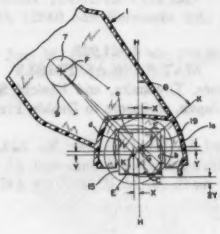
VACUUM CLEANER TOOL HAVING A TWO-POSITION ROTARY BRUSH

Danny R. Jinkins, Bel Air, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Mar. 26, 1981, Ser. No. 247,827

Int. Cl.³ A47L *5/34*

U.S. Cl. 15—355 **5 Claims**



1. A rotary brush for use in a vacuum cleaner tool, said apparatus comprising:

(a) a dowel having a diameter of less than 22.3 millimeter;

(b) a first axial bore extending along the axis of said dowel;

(c) an axle positioned in said first axial bore and extending therefrom;

(d) a second axial bore in said dowel;

(e) a third axial bore in said dowel;

(f) bearing means fixed to the periphery of said second axial bore for rotatably mounting said dowel on said axle, wherein said bearing means includes a flange extending radially from said one end thereof in said third bore; and

(g) end cap means mounted on the portion of said axle which extends from said first bore.

4,361,930

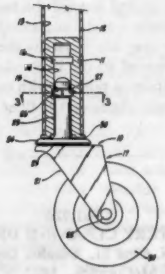
CASTER SOCKET ASSEMBLY

Robert E. Seesengood, Conway, Ark., assignor to Tiffany Industries, Inc., St. Louis, Mo.

Filed Nov. 16, 1979, Ser. No. 94,709

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—38 **2 Claims**



1. A caster socket assembly for attachment of a caster to a furniture leg having an opening, comprising:

(a) a plastic housing having a cylindrical socket provided with an annular groove, the housing being insertable in the opening of the furniture leg,

(b) a caster including a cylindrical pintle having an annular groove, the pintle being insertable in the socket,

(c) a retaining means attached to the caster at the pintle groove, and selectively engaging the housing at the socket groove to retain the pintle in the housing,

(d) the retaining means including a split C-ring attached to the caster at the pintle groove, the C-ring having an outside diameter greater than the pintle, the C-ring being resiliently compressible for sliding the pintle into and out of the housing socket, and being resiliently expandable within the housing socket groove to retain the pintle within the housing socket in a mounted position,

(e) the C-ring remaining expanded into the housing socket groove under the normal weight of the caster, and is resiliently compressible within the pintle groove and out of the housing socket for removal of the pintle from the housing socket when a sufficient axial force is applied to the pintle,

(f) the cylindrical housing socket having a vertically spaced, second annular groove,

(g) a caster is provided including a cylindrical pintle of different length than the first said pintle and having an annular groove,

(h) a split C-ring is attached to the caster at the last said pintle groove and is selectively received in the said second housing socket groove for accomodating pintles of different lengths,

(i) the housing includes a closed top end of the socket, the closed end providing a rotative bearing surface for engaging the top of the pintle of one of said casters and transferring weight applied to the furniture leg to said caster when the caster is in the mounted position, and

(j) the housing includes a lower bearing surface engageable with the other of said casters for carrying weight applied to the furniture leg when said other caster is in the mounted position.

4,361,931
FURNITURE FITTING

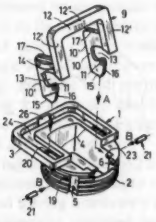
Manfred Schnelle, Hiddenhausen; Manfred von Reden, Bad Oeynhausen; Willi Pittasch, Herford, and Peter Busse, Vlotho, all of Fed. Rep. of Germany, assignors to Firma Richard Heinze GmbH & Co., KG, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 56,144

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833120; Feb. 13, 1979, 2905378

Int. Cl.³ E05D *5/02*

U.S. Cl. 16—252 **21 Claims**



1. A furniture fitting comprising:

(a) a housing including a portion having a circumferential wall having a circumferential outline for fitting within a corresponding bore of a furniture component;

(b) locking means including at least one locking element pivotally mounted on said housing for pivoting about a pivoting axis thereon, said pivoting axis extending through the circumferential wall of said portion;

(c) said portion having an opening therein for receiving said locking element;

(d) said locking element being pivotable from a position at least partially outside of said opening into a second position within said opening; and

(e) means on the locking element for increasing the circumferential outline of said portion when the locking element is pivoted into said opening whereby said fitting is anchored in said bore when said portion is fitted into said bore and said locking element is pivoted into its second position within said opening.

4,361,932
APPARATUS FOR ELECTRICALLY STUNNING SLAUGHTER CATTLE

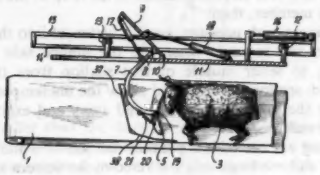
Johan W. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G.J. Nijhuis B.V., Winterswijk, Netherlands

Filed Aug. 18, 1981, Ser. No. 293,882

Claims priority, application Netherlands, Aug. 19, 1980, 8004688

Int. Cl.³ A22B *3/06*

U.S. Cl. 17—1 E **13 Claims**



1. Apparatus for the electrical stunning of slaughter cattle, comprising:

a pair of endless conveyor means placed next and parallel to each other such that between them a V-shaped passage is formed defined by the opposite parts of the conveyor means, which parts can move with the same speed in the same direction and may carry the body of an animal;

a set of electrodes located next to each other, the electrodes being adapted to extend into the passage, the electrodes being adapted to move with the conveyor device, the electrodes being swingable out of the path of the animal, the electrodes being mounted upon levers, the levers having an initial portion that extends forwardly and inwardly within the passage, and the levers having a subsequent portion that curves and extends against the direction of movement, the levers being connected to a device by means of which the levers with the electrodes can be swung out of the passage and out of the path of the animal.

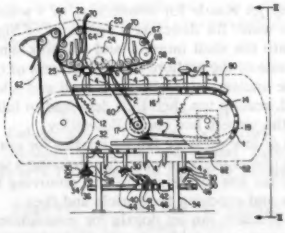
4,361,933
METHOD OF SHUCKING SCALLOPS AND AN APPARATUS THEREFOR

William K. Rodman, Bedford, and Peter de St. Denys Prevost, Waverley, both of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed May 11, 1981, Ser. No. 262,628

Int. Cl.³ A22C *29/04*

U.S. Cl. 17—48 **10 Claims**



1. A method of shucking scallops, comprising:

(a) placing unshucked scallops on scallop cradles distributed

along the length of, and attached to a moving, endless flexible member, with the hinged portion of the shell of each of the scallops overhanging one side of the cradle on which it is placed and an edge portion of the shell, opposing the hinged portion, overhanging the other side of that cradle,

(b) clamping a central portion of each unshucked scallop while that scallop passes a saw cutting position,

(c) making two parallel saw cuts to each of the clamped, unshucked scallops to cut and remove the overhanging portion thereof from the remainder and expose the shell interior, then

(d) clamping, by fingers entering the exposed shell interior, only the bottom, sawn shell of each scallop to the cradle it is on prior to and while that scallop is inverted, with muscle thereon, on a second side of the loop of the endless flexible member, then

(e) directing a high pressure, pencil, water jet into the shell interior, and towards what was the hinged side of the scallop, to sever muscle of that scallop from the unclamped, scallop top shell and allow the unclamped, scallop top shell thus detached to fall away and expose the viscera and roe, then

(f) directing a series of low pressure fan jets of water at the viscera and roe to detach and remove the viscera and roe and expose the muscle, then

(g) directing a high pressure fan jet of water which substantially conforms to the interior curvature of the shell, to sever and remove the exposed muscle from the shell, then

(h) unclamping the bottom, sawn shell of the scallop from the cradle to which it was clamped to allow that bottom, sawn shell to fall away from that cradle.

6. A scallop shucking apparatus, comprising:

(a) an endless flexible member,

(b) scallop cradles distributed along the length of the endless flexible member, and attached thereto, for each receiving an unshucked scallop thereon with a hinged portion of the shell thereof overhanging one side of the cradle on which it is placed and an edge portion of the shell, opposing the hinged portion, overhanging the other side of that cradle,

(c) mounting means around which the endless flexible member is looped so that each of the cradles on a first side of the loop faces upwardly for receiving the scallop thereon,

(d) driving means for driving the endless flexible member around the mounting means,

(e) clamping means for clamping a central portion of each unshucked scallop to the cradle therefor only while that scallop passes a saw cutting position,

(f) two drivable parallel, saw blades at the scallop cutting position for cutting and removing the overhanging portions of each scallop shell from the remainder and exposing the shell interior,

(g) clamping fingers for entering opposite sides of the scallop and clamping only the bottom, sawn shell of each scallop to the cradle it is on prior to and while that scallop is inverted on a second side of the loop of the endless flexible member, and, in the direction for movement of the endless flexible member,

(h) a water jet nozzle for connection to a source of high pressure water for directing a pencil jet of high pressure water into the shell interior, and towards what was the hinged side of the scallop, to sever muscle of that scallop from the unclamped, scallop top shell and allow the unclamped, scallop top shell thus detached to fall away and expose the viscera and roe, followed by

(i) a series of low pressure fan jet nozzles for connection to a source of low pressure water for directing a series of low pressure fan jets for detaching and removing the viscera and row and exposing the muscle and then

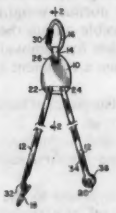
(j) a high pressure fan jet nozzle for connection to a high pressure water source for directing a high pressure fan jet which substantially conforms to the interior curvature of the shell for severing and removing the exposed muscle from the shell.

4,361,934

GOLF SCORE CARD AND PENCIL HOLDER

Randolph G. Darnell, 32390 Hampton Ct., Union City, Calif. 94587

Filed Aug. 11, 1980, Ser. No. 176,927
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—3 M **10 Claims**



1. A golf score card and pencil holder comprising

a main body portion including a plate section; a thin, elongated extension section; and fastener means attaching the distal end of said elongated extension section to said plate to form said extension into a loop,

means engaged with said loop for removably attaching said main body portion to a golf bag,

first cord means extending from said plate section,

clip means attached to an end of said first cord means,

second cord means extending from said plate section, and

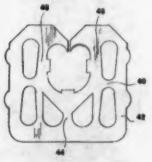
writing instrument holder means attached to an end of said second cord means.

4,361,935

BAG CLOSURE

Jerre H. Paxton, P.O. Box 9548, Yakima, Wash. 98909

Filed Jun. 9, 1980, Ser. No. 157,450
Int. Cl.³ B65D *77/10*; A44B *21/00*
U.S. Cl. 24—30.5 R **8 Claims**



1. A side opening closure for closing the neck of a flexible bag or the like, comprising:

a body of flat, generally rigid material having a bag-neck confining aperture and a bag-access opening to said aperture through a side edge of the body, said access opening dividing the body on opposite sides thereof into a pair of jaws;

said bag-neck confining aperture having a peripheral outline defined by a plurality of peripherally spaced, inwardly extending appendages each having a generally straight, blunted inner edge and a generally straight, blunted side edge defining at least one bag-gripping, pointed corner, and wherein the spaces between and around said appendages define recesses to receive the neck of the bag with the pointed corners of adjacent appendages confronting one another for holding the flexible bag against rotational, endwise movement through the closure.

4,361,936

DECORATIVE CUFFLINK

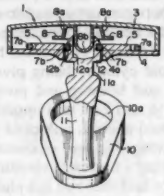
Hideo Kurashima, 2-5-6 Negishi, Taito-ku, Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,929

Claims priority, application Japan, May 19, 1981, 56-72231[U]

Int. Cl.³ A44B 5/00

U.S. Cl. 24—41 **7 Claims**



1. In a cufflink which is disassemblably assembled of two sub-assembly elements comprising a decorative head element and a link shank element,

the improvement wherein:

(a) the decorative head element includes:

(i) a casing shell having a rear cover plate centrally provided with a through hole and an inside face presented towards the interior of the casing shell;

(ii) a spectacles frame-shaped spring clip having a pair of laterally spaced, generally U-shaped legs having respective free end portions nearest one another and having respective opposite ends joined by a rim; said rim, in the vicinity of said free end portions having an arcuate bridge portion; all of said spring clip but for said bridge portion lying generally in a common plane, and said bridge portion extending at an acute angle which intersects said common plane where said bridge portion meets the remainder of said rim;

(iii) said rear cover plate including limited gap bracket means mounting said spring clip by the jamming of said bridge portion into a limited gap provided by said bracket means, this limited gap being able to receive said bridge portion only when said rim is resiliently torsionally stressed by an amount sufficient to cause said bridge portion to lie substantially in said common plane, whereby said spring clip is resiliently loaded against said inside face of said rear cover plate;

(iv) said spring clip free end portions being juxtaposed with said hole for normally blanking-off two diametrically-opposed perimetrical segments of the hole; and

(b) the link shank element includes:

(i) a shank having a head end and a keeper end;

(ii) a keeper secured to the keeper end of the shank;

(iii) the head end having a convexly curved head provided with a diametrically opposed pair of grooves which extend angularly of the shank,

so that when the head of the link shank element is thrust into the hole in the rear cover plate of the decorative head element, the head first deflects the spring clip legs away from the rear cover plate and their free end portions laterally away from one another, until the free end portions snap into the respective grooves as the torsional stresses in said rim force the spring clip legs back against said inside face of said rear cover plate.

4,361,937

CABLE BANDING LOCK RING

C. Arthur Davis, Rte. 6, Box 137, Ada, Okla. 74820

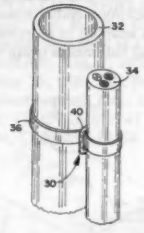
Filed Nov. 28, 1980, Ser. No. 211,317

Int. Cl.³ A43C 11/00

U.S. Cl. 24—68 PP **6 Claims**

1. A cable banding lock ring for embracing and retaining a banding strap which engages around two members which are banded together, said cable banding lock ring comprising:

a substantially rectangular metallic open-centered lock ring having first and second sides which are attached together and which are sufficiently long to embrace around the banding strap, said sides being spaced apart a distance



smaller than the distance across one of the members so that, when said lock ring engages on the banding strap between the members strapped together with the banding strap, said lock ring pulls the banding strap into greater circumferential engagement with the members banded together.

4,361,938

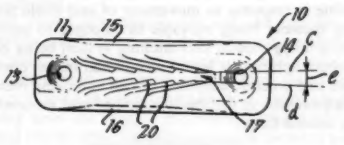
JAMMING CLEAT

Howard Emery, 17 Heras La., Welwyn Garden City, England

Filed Mar. 20, 1980, Ser. No. 132,341

Int. Cl.³ F16G 11/04

U.S. Cl. 24—130 **14 Claims**



1. A jamming cleat having a stationary groove to receive and grip a rope, at least a part of the depth of the groove having correspondingly stationary facing side walls each of which is formed with a plurality of ridges which are inclined upwardly from the base of the groove towards one end of the groove, the crests of the ridges on each side of the groove lying generally in one common correspondingly stationary ridge crest plane, which corresponding stationary ridge crest planes converge downwardly towards the bottom of the groove, wherein the said stationary ridge crest planes diverge at a fixed angle lengthwise of the groove away from the said one end of the groove to thereby more uniformly grip a rope extending lengthwise within the groove and downwardly from the said one end of the groove.

4,361,939

COUPLING SYSTEM

Jerome D. Gelula, 535 E. 86th St., New York, N.Y. 10028; Bertram Slanhoff, Scarsdale, and Isidore Kalichman, Elmhurst, both of N.Y., assignors to Jerome D. Gelula, New York, N.Y.

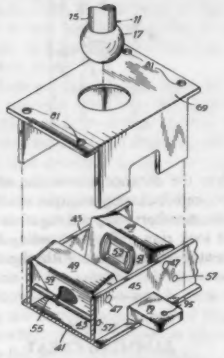
Filed Feb. 21, 1980, Ser. No. 123,413

Int. Cl.³ A44B 17/00

U.S. Cl. 24—211 M **1 Claim**

1. A latching system, comprising, in combination: a supporting structure, at least one capture member supported for movement between capturing and releasing positions by said sup-

porting structure, a locking member for the captive member supported for movement between interfering and non-interfering positions by said supporting structure, first spring means carried by said supporting structure normally biasing said capture member toward said releasing position, second spring means carried by said supporting structure normally biasing said locking member toward said interfering position, unlocking means integral with said locking member for enabling movement of the locking member toward said non-interfering position, ball means adapted to be releasably captured by said capture member, said ball means being formed with an internal



cavity, cable means with portions thereof disposed within said cavity for influencing said unlocking means from a location remote from said locking member, pin means disposed within said cavity for guiding portions of said cable means and spring-biased protruding means extending from said ball means and moveable in response to movement of said cable means, said locking member being movable in response to movement of said protruding means, said latching system being capable of releasably capturing at least one said ball means desired to be retained and wherein actuation of said unlocking means with a first force results in forcible ejection of said retained member with a second force.

4,361,940

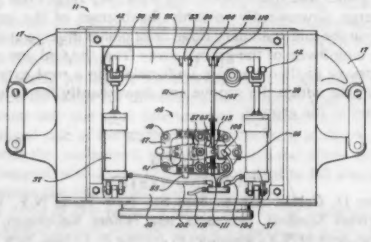
SLIP-TYPE ELEVATOR LOCKING MECHANISM

Edward J. McFadden, Houston, Tex., assignor to BJ-Hughes Inc., Houston, Tex.

Filed Aug. 4, 1981, Ser. No. 289,945

Int. Cl.³ F16L *33/10*

U.S. Cl. 24—263 DA **17 Claims**



8. An automatic locking mechanism for a slip-type elevator of the type having a series of fluid pressure operated slips in a tapered bowl and a slip-setting yoke for pivotally setting said slips, comprising:

a housing for mounting on said elevator;

a lock rod having one end adapted to be connected to said slip-setting yoke and having a free end extending in a direction generally parallel with the direction of movement of said slips in said bowl and in the plane of said housing;

a cam arm mounted on said housing at a central pivot point, said cam arm having a cam throat on one end adapted to receive said lock rod free end and having an opposite end, and wherein said cam arm is pivotable about said central pivot point between upper and lower lock rod engaging positions and a neutral, unlocked position; and

a fluid cylinder having a cylindrical base end and an output shaft, said fluid cylinder being pivotally mounted at said base end to said housing and pivotally attached at said output shaft to said cam arm opposite end for urging said cam arm to said neutral, unlocked position;

a yoke rod having one end connected to said slip-setting yoke and having a free end extending in a direction generally parallel to said lock rod in a plane which intersects the plane of said cam arm opposite end; and

tension means on said yoke rod for urging said cam arm toward a select one of said upper and lower lock rod engaging positions when fluid pressure is lost in said fluid cylinder.

4,361,941

VALVE AND WIRE CUTTING, SKINNING AND WRAPPING TOOL EMPLOYING THE VALVE

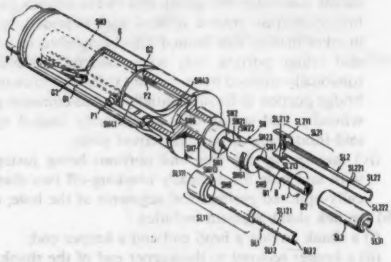
Frans P. J. Bolssens, Heide Kalmthout; Guy C. J. L. G. G. M. Franck, Borsbeek, and Henri Dehertefelt, Niel, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 892,573, Apr. 3, 1978. This application Jun. 25, 1980, Ser. No. 162,844

Claims priority, application Netherlands, Apr. 29, 1977, 7704709

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—33 M **5 Claims**



1. A wire cutting, skinning and wrapping tool capable of performing two successive skinning and wrapping operations in order to interconnect two terminals with an insulated wire comprising:

a hollow sleeve;

a knife carried by said sleeve; and

a bit provided with a longitudinal groove which is able to slide in a forward and backward direction in said sleeve, said bit and said knife skinning said wire over a predetermined length;

means associated with said bit to move said bit from a backward position to a forward position during said skinning operation, the skinned wire portion being situated in said longitudinal groove during said two skinning operations;

said sleeve being provided by normally closed sleeve halves, said insulated wire opening said sleeve halves longitudinally during said skinning operations and that said sleeve halves close again when said bit is in its forward position after each skinning operation, said predetermined skinned

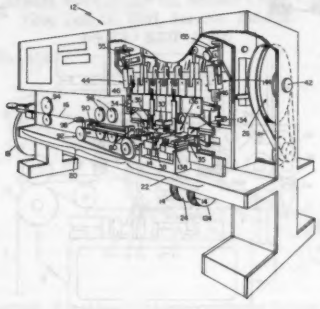
wire length being captured in said groove between said bit and said closed sleeve halves.

4,361,942

TERMINAL APPLYING MACHINE

Ralph Mazzola, Brighton, and Harry V. Leaf, Marshfield, both of Mass., assignors to Ark-Les Corporation, Watertown, Mass.

Filed Sep. 23, 1980, Ser. No. 190,046
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—33 M **4 Claims**



1. An automatic wire terminal applying machine for attaching a terminal to at least one end of a length of wire, said terminal having a metal body including a terminal-receiving portion and a wire-receiving portion of generally cylindrical shape, said machine having a plurality of longitudinally arranged operating means, including

wire feed means for feeding said length of wire,

guide tube means for guiding said length of wire,

longitudinally movable wire clamping means,

wire stripping means for stripping said wire end,

terminal strip feed means for feeding a terminal,

transversely movable terminal applicator means,

longitudinally spaced between said wire clamping and stripping means and operable to apply a terminal to a stripped wire end positioned in overlapping relationship with said terminal, and

wire end position control means for longitudinally moving said wire clamping means to position said stripped wire end in overlapping relationship with said terminal for transverse application of said terminal thereto,

said wire end position control means including

wire retraction means for retracting said stripped wire end prior to operation of said terminal applicator means to a non-overlapping position longitudinally spaced from said terminal

wire insertion means for advancing said stripped wire end prior to operation of said terminal applicator means from said non-overlapping position for longitudinal insertion thereof into said overlapping terminal position, said wire insertion means having depth of insertion means adapted to terminate the advance of said stripped wire end in said wire-receiving portion of said terminal

said wire retraction means having trip means adapted to terminate the further retraction of said stripped wire end and to actuate said wire insertion means, and

reset means adapted to reset said wire end position control means

whereby said terminal applying machine is adapted to attach a closed barrel terminal to a length of wire, and

said guide tube means includes an outer guide tube adapted to center and to guide said attached terminal through said machine

said outer guide tube having a spring-biased inner guide tube concentric with said outer tube adjacent a forward end of said outer tube adapted to receive said wire

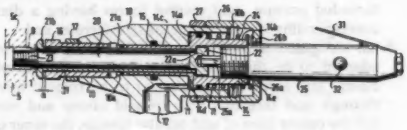
whereby said outer tube is adapted to receive said attached terminal within said forward end of said outer tube when guiding said attached terminal through said machine.

4,361,943

DEVICE FOR INSTALLING THREADED BUSHES

Klaus Kobusch, Bielefeld, Fed. Rep. of Germany, assignor to Böllhoff & Co., Bielefeld, Fed. Rep. of Germany

Division of Ser. No. 931,408, Aug. 7, 1978, abandoned. This application May 23, 1980, Ser. No. 152,591
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 7725059[U]; Mar. 17, 1978, 2811747
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—240 **6 Claims**



1. A device for rotatably inserting an axially deformable threaded bush into a workpiece, said device comprising:

a housing;

a rod rotatably located in said housing, said rod having means for engaging the bush to insert the bush in the workpiece by rotation of the rod;

means coupled to said rod for rotating same;

a fluid pressure responsive piston located in said housing and movable relative thereto, said piston being coupled to said rod for obtaining relative movement between said housing and rod; and

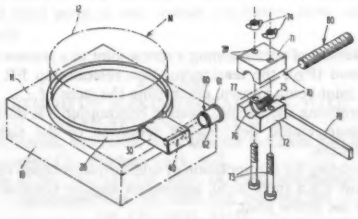
abutment sleeve surrounding said rod and rotatable with respect to said housing, said sleeve having a surface abuttable with a bush engaged on said rod, said sleeve being restrained against axial movement in a first direction with respect to said rod and having a portion coacting with said housing upon the relative movement between said housing and rod for effecting axial movement between said rod and sleeve in a second direction to axially deform the bush engaged on said rod.

4,361,944

BARREL LOCK FERRULE EXTRACTOR

Earle B. Hamilton, P.O. Box 943, Buckingham, Pa. 18912

Filed Jun. 4, 1981, Ser. No. 270,384
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—256 **3 Claims**



1. A ferrule extractor tool for extracting a tubular ferrule from the cover housing of a kilowatt-hour meter which has a split locking ring having outwardly extending end extensions at the location of the split which are screwed together and covered by said cover housing, said cover housing being pro-

vided with a barrel lock for preventing removal of said cover housing, said barrel lock having a cylindrical head portion which is covered by said ferrule, said ferrule having an annular rib at its inward end located within said cover housing, said ferrule having an annular flange at its outer end located outside said cover housing, said ferrule extractor tool comprising:

a. a two-piece clamp comprised of two halves adapted to be mated together;

b. each half being provided with a semi-circular threaded portion at one end, a first semi-circular recess portion at the other end, and a second semi-circular flange-receiving recess between said first recess and said threaded portion;

c. said clamp halves being adapted to be bolted together to form a clamp, said clamp having a threaded hole of circular cross section at said one end, a circular first recess having a diameter corresponding to the outside diameter of said tubular ferrule at said other end, and an enlarged circular second recess between said first recess and threaded portion, said second recess having a diameter corresponding to said flange of said ferrule; and

d. an elongated actuating screw of circular cross section adapted to be threaded into said threaded hole of said clamp, said screw being adapted to be rotated inwardly through said threaded hole of said clamp and into the hollow center bore of said tubular ferrule, the inner end of said screw coming into abutting position against the head of said barrel lock, continued rotation of said screw in the tightening direction causing said clamp to move outwardly on the threads of said screw thereby pulling said ferrule outwardly, thereby to remove said ferrule from said cover housing of said meter.

4,361,945

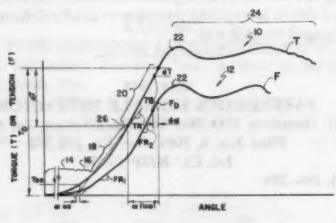
TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,344

Int. Cl.³ B23P *19/06*

U.S. Cl. 29—407 **21 Claims**



1. Method of pretensioning a screw joint to a predetermined axial load (F_D), the tension/rotation relationship FR of the screw joint being known, comprising the steps of

determining the torque/rotation relationship TR during the linear, elastic deformation sequence of the tightening process,

calculating by extrapolation of said torque/rotation relationship TR a theoretical, tensionless angular position α_{origin} of the screw joint,

applying a tightening torque to the screw joint,

sensing when the screw joint has been rotated with relation to said theoretical, tensionless angular position α_{origin} an angular interval which according to said known tension/-rotation relationship FR corresponds to said predetermined axial load F_D, and then

discontinuing said tightening torque application responsive to said sensing when the screw joint has been rotated through said angular interval.

4,361,946

METHOD OF AND APPARATUS FOR ATTACHING SLIDERS AND TOP END STOPS FOR SLIDE FASTENERS

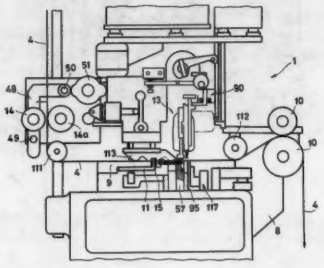
Tadahiro Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Dec. 5, 1980, Ser. No. 213,737

Claims priority, application Japan, Dec. 14, 1979, 54-162289

Int. Cl.³ B23P *11/00, 19/04;* **B21D** *53/52*

U.S. Cl. 29—408 **28 Claims**



1. A method of attaching a slider and a pair of top end stops to a pair of continuous stringers for slide fasteners, each stringer having successive spaced groups of coupling elements mounted on a continuous stringer tape and interengaged with opposed complementary groups of coupling elements on the other stringer tape, there being successive pairs of opposed blank tape portions between the successive spaced pairs of coupling element groups, said method comprising the steps of:

(a) moving the pair of continuous stringers longitudinally along a path in a predetermined direction;

(b) sensing the arrival of one of the successive spaced pairs of coupling element groups;

(c) in response to said arrival, spreading one of the successive pairs of opposed blank tape portions;

(d) setting and retaining the slider at a first fixed point between such spread one pair of opposed blank tape portions;

(e) in response to said setting of the slider, releasing said spreading to allow said one pair of opposed blank tape portions to come into engagement with shoulders of a Y-shaped guide channel of the slider,

(f) then, moving the pair of continuous stringers along the path in a direction opposite to said predetermined direction to such an extent that said one pair of opposed blank tape portions are threaded through the guide channel of the slider;

(g) then, further moving the pair of continuous stringers along the path in said predetermined direction until end portions of said one of the successive spaced pairs of coupling element groups are introduced into the guide channel of the slider;

(h) then, further spreading said one pair of opposed blank tape portions;

(i) setting and retaining the pair of top end stops at a pair of transversely spaced second fixed points so as to thread said further spread one pair of opposed blank tape portions through the pair of top end stops, respectively, said second fixed portions being spaced from said first fixed point along the path;

(j) then, further moving the pair of continuous stringers along the path in said predetermined direction, to disengage said end portions of said one of the successive spaced

pairs of coupling element groups, until endmost disengaged coupling elements reach the top end stops retained at said second fixed points; and

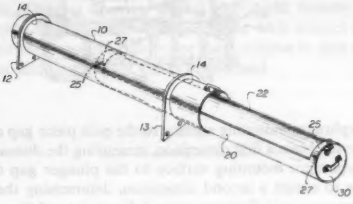
(k) then, clinching the top end stops retained at said second fixed points, the top end stops being thereby secured to one end of said further spread one pair of opposed blank tape portions which end is adjacent to said endmost disengaged coupling elements.

4,361,947

STORAGE CONTAINER AND METHOD OF MAKING SAME

Ronald L. Arnaud, 121 Culligan Ct., Boulder Creek, Calif. 95006

Filed Feb. 19, 1981, Ser. No. 236,028
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—416 **4 Claims**



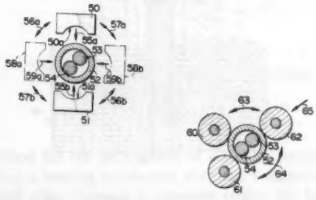
1. A method of making a storage container from a cylindrical member of predetermined length comprising the steps of cutting the member in half to provide two tubular sections of substantially equal length, making cuts in one section extending generally longitudinally of said one section to remove a longitudinal portion of the section and permit it to be formed into a new tubular section having a diameter less than the inner diameter of the other section, forming said one section into the new tubular configuration and securing it in said new tubular configuration, and closing the ends of said new tubular section.

4,361,948

METHOD OF MANUFACTURING CYTODIAGNOSTIC BRUSH ASSEMBLY

Katumi Omata, Sagamihara, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Jun. 6, 1980, Ser. No. 157,096
Claims priority, application Japan, Jul. 20, 1979, 54/92363
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—517 **6 Claims**



1. A method of manufacturing a cytodiagnostic brush having two wound strands which form the brush, said method comprising the steps of:

providing a cylindrical sleeve having a circular outer diameter and a circular inner diameter and a wall of uniform thickness; said circular inner diameter being sufficiently large so that end portions of said two wound strands may be simultaneously inserted therein;

inserting said end portions of said strands into said sleeve;

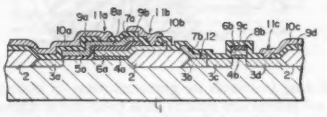
securing said sleeve to said strand end portions by deforming said sleeve so as to reduce its said inner and outer diameters, maintain the circular shape of its said outer diameter and provide direct contact between the end portions of both of said strand portions around substantially the entire circumference of each of said strands which lie within said sleeve and said inner diameter of said sleeve along the entire length of said strand portions which lie within said inner diameter of said sleeve.

4,361,949

PROCESS FOR MAKING A MEMORY DEVICE

Ryoichi Hori, Tokyo; Masaharu Kubo, Hachioji; Norikazu Hashimoto, Tokorozawa; Shigeru Nishimatsu, Kokubunji, and Kiyoo Itoh, Higashi-kurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 269,507
Claims priority, application Japan, Mar. 4, 1977, 52-22681
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **25 Claims**



1. A process for making a multi-level electrode structure for a semiconductor device formed in a surface region of a single semiconductor substrate, comprising steps of:

forming a first conductive layer above a first part of the surface region of said substrate;

forming a first insulating layer on said first conductive layer;

forming a first opening in a first part of said first insulating layer;

forming a second conductive layer so that a first part of said second conductive layer overlies a second part of the surface region of said substrate and a second part of said first insulating layer, and so that a second part of said second conductive layer overlies a third part of said first insulating layer which is between said first and second parts of said first insulating layer, and so that a third part of said second conductive layer is connected with said first conductive layer;

removing said second part of said second conductive layer so that said third part of said second conductive layer is isolated from said first part of said second conductive layer;

forming a second insulating layer so that first and second parts of said second insulating layer respectively overlie said first and third parts of said second conductive layer;

forming second and third openings simultaneously in said first and second parts of said second insulating layer; and

filling said second and third openings simultaneously, respectively, with first and second conductors so that said first and second conductors are connected with said first and third parts of said second conductive layer, respectively.

4,361,950

METHOD OF MAKING SOLAR CELL WITH WRAP-AROUND ELECTRODE

James A. Amick, Princeton, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 133,028, Mar. 24, 1980, abandoned. This application Mar. 10, 1981, Ser. No. 242,284
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **4 Claims**

1. A method of making a solar cell with a wrap-around electrode whereby said cell has electrodes on the back surface thereof comprising:

providing a back-to-back assembly of two semiconductor bodies of one conductivity type separated by a chemically

inert spacer having substantially the same geometry, but of smaller dimensions as said semiconductor body;

treating said assembly with a dopant material whereby a surface layer of opposite conductivity type is deposited over the entire surface of said semiconductor bodies, around the edges thereof and in a strip around the perimeter of the back surface of said semiconductor body;

abrading the back surface of said semiconductor body to define a junction between the bulk portion of said semiconductor body and said surface layer;

forming a grid and first electrode pattern on said surface layer, said first electrode pattern extending in a strip along at least a portion of the perimeter of the top surface of said semiconductor, around the edge thereof and in a strip along at least a portion of the perimeter of the back surface of said cell;

forming a second electrode pattern on the back of said semiconductor body and in contact with the bulk portion thereof, said second electrode pattern separated by an area having at the surface thereof said junction between said surface layer and said bulk portion; and

metallizing said patterns.

4,361,951

METHOD OF FABRICATING A TITANIUM DIOXIDE RECTIFIER

Allen H. Meitzler, Ann Arbor; William T. Donlon, Jr., Detroit, and Samuel S. Shinozaki, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 22, 1981, Ser. No. 256,412
Int. Cl.³ H01L *21/20*
U.S. Cl. 29—585 **4 Claims**

1. A method for making a rectifier circuit element comprising the steps of:

forming a structure with a porous, fine-grain, polycrystalline ceramic oxid main body with a pair of spaced faces and a platinum contact electrode on each of the spaced faces;

applying a dc voltage across the structure;

heating the structure to a temperature of about 750° to 850 ° C.;

applying an oxidizing atmosphere;

applying a reducing atmosphere;

cycling between oxidizing and reducing atmospheres to form planar microstructures; and

cooling the structure.

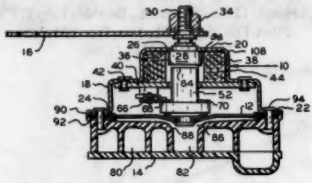
4,361,952

METHOD OF ADJUSTING AIR GAP OF AN ELECTRIC HORN

James A. Neese, Flora, Ill., assignor to Sparton Corporation, Jackson, Mich.

Filed Feb. 23, 1981, Ser. No. 236,662
Int. Cl.³ H04R *31/00*
U.S. Cl. 29—594 **3 Claims**

1. The method of adjusting the air gap between the pole piece and plunger of an electric horn wherein the horn includes a sheet metal housing of cup configuration having a sidewall and a bottom wall, an electromagnetic coil within the housing adjacent the walls thereof, a pole piece fixed relative to the bottom wall within the coil, a diaphragm mounted upon the housing having a ferromagnetic plunger affixed thereto extending into the coil toward the pole piece, the housing including a diaphragm mounting surface engagable by a mounting surface defined on the diaphragm adjacent its periphery, the pole piece and plunger each including opposed spaced gap surfaces defining an air gap whose dimension determines the horn audible characteristics and electric switch means operated by the plunger to cyclic energize the coil, comprising the steps of measuring the distance from the housing diaphragm mounting surface to the pole piece gap defining surface to obtain a first dimension, measuring the distance from the diaphragm mounting surface to the plunger gap defining surface to obtain a second dimension, determining the difference between said first and second dimensions, deforming the housing to vary said first dimension in accord with the difference between said first and second dimensions whereby upon assembly of the housing and diaphragm a predetermined air gap dimension will result, and assemblying the housing and diaphragm.

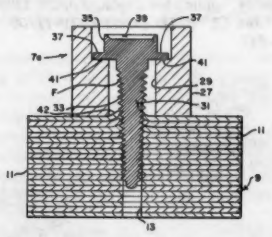


4,361,953

METHOD OF SECURING END SHIELDS TO THE STATOR ASSEMBLY OF A DYNAMOELECTRIC MACHINE

C. Theodore Peachee, County of St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 956,355, Oct. 31, 1978, Pat. No. 4,306,168.
This application Aug. 31, 1981, Ser. No. 298,080
Int. Cl.³ H02K *15/14*
U.S. Cl. 29—596 **3 Claims**



1. A method of assembling a dynamoelectric machine, such as a fractional horsepower motor or the like, said motor having a stator assembly including a core made up of a stack of laminations of suitable magnetic material, said core having a central bore extending therethrough, a rotor assembly including a rotor body adapted to be rotatably received in said bore and a rotor shaft extending endwise from said rotor body, and at least one end shield, the latter having a bearing adapted to receive and to journal said rotor shaft, said method comprising the steps of:

inserting said rotor assembly into said stator assembly with said rotor being received in said bore;

centering said rotor body within said bore so that said motor

has an air gap between said rotor body and said core of substantially uniform thickness therearound;

installing said end shield on said stator assembly and on said rotor assembly so that said rotor shaft is journalled in said bearing and so that said portions of said end shield bear against an adjacent portion of said core, said end shield portions having holes therethrough and said adjacent portion of said core having holes therein in substantial alignment with said holes in said end shield portions when said end shield is fitted on said stator assembly; and

inserting threaded fasteners into said end shield holes and into said holes in said core and tightening said fasteners so as to draw said end shield into firm gripping engagement with said core and so as to bend outwardly at least the outermost lamination adjacent said holes in said core with the outwardly bent portion protruding at least partially into a mating opening in said end shield thereby to securely hold said end shield in place with respect to said core and to journal said rotor shaft relative to said core so that said uniform air gap is maintained.

4,361,954

METHOD OF AND APPARATUS FOR THE PRODUCTION OF A TOASTER HEATING ELEMENT

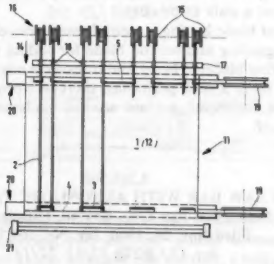
Helmut Ohnmacht, Kandel, and Edwin Höfer, Bellheim, both of Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 146,162

Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917808

Int. Cl.³ H05B *3/00*

U.S. Cl. 29—611 **18 Claims**



1. Method for the production of a toaster heating element comprising a heating conductor wire and a support plate provided with edge recesses at opposite edges, the heating conductor wire being disposed substantially over a front, heating side of the support plate, comprising the steps of arranging connecting strips of electrically conductive material at a rear side of the support plate (1), which is opposite the heating side, so that each strip extends fully across a dimension of the support plate in the region of the edge recesses (3) of a respective one of said opposite edges, arranging a plurality of heating conductor wires (2) substantially parallel to one another each of the conductor wires crossing the connecting strips (5) in the region of an oppositely located pair of the edge recesses (3) at the heating side, electrically connecting said conductor wires to the connecting strips (5), and then cutting said conducting wires to form discrete conductive lengths.

4,361,955

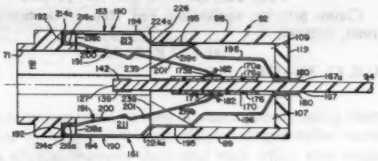
ELECTRICAL JACK AND METHOD OF MAKING SAME

Jesse F. Lancaster, Great Falls, Va., assignor to Dynatech Laboratories, Incorporated, Alexandria, Va.

Division of Ser. No. 955,233, Oct. 27, 1978, Pat. No. 4,256,936, which is a continuation-in-part of Ser. No. 650,019, Jan. 19, 1976, Pat. No. 4,140,918, which is a continuation-in-part of Ser. No. 420,584, Nov. 30, 1973, abandoned. This application Dec. 5, 1980, Ser. No. 213,629

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—884 **3 Claims**



1. A method of manufacturing an electrical jack having a housing which is provided with at least one socket for slidably receiving a printed circuit board edge connector, a printed circuit board having an end portion extending into said socket for reception in said connector upon insertion of the connector into said socket, and switching means comprising a set of contact spring members normally conditioned to cooperate with a printed circuit on said board for electrically interconnecting two sets of the jack's terminals and actuatable in response to the reception of the connector in said socket to electrically disconnect the two sets of terminals from each other, said method comprising the steps of forming said housing with said socket and with an aperture which extends through a side wall of said housing to open into the interior of said housing, inserting said board into said housing to position said end portion in said socket, securing said circuit board to said housing after it is inserted into said housing and inserting said spring members through said aperture to positions in said housing where they engage and are removably trapped in place between surfaces on said housing and said board.

4,361,956

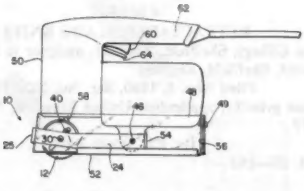
OSCILLATING SAW ACCESSORY

Norbert A. Kirk, c/o ABC Toy Designers, 43 E. Ohio St., Rm. 930, Chicago, Ill. 60611

Filed Jan. 14, 1981, Ser. No. 225,050

Int. Cl.³ B27B *9/00*

U.S. Cl. 30—122 **10 Claims**



1. An oscillating saw accessory for attachment to a tool having a reciprocating member comprising:

a circular saw blade;

a housing for said saw blade;

means to mount said saw blade to said housing for rotary movement;

means to attach said housing to the tool such that said saw blade is disposed adjacent to the reciprocating member and the plane of rotation of said saw blade is substantially parallel to the axis of reciprocation of the reciprocating member; and

means to connect said saw blade to the reciprocating member whereby the reciprocating movement of the reciprocating member produces an oscillating movement of said saw blade which may be used for cutting.

4,361,957

PNEUMATIC HAND TOOL WITH VACUUM DEBRIS REMOVAL

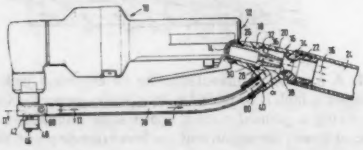
Hermann Krötz, Murrhardt-Steinberg, and Robert Klenk, Grosserlach-Schönbronn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,533

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005860

Int. Cl.³ B26B *15/00*

U.S. Cl. 30—124 **20 Claims**



18. For combination with a compressed air, reciprocating hand tool having a tool housing: a reciprocating cutting head **(42)** mounted on the tool housing, and an air exhaust port **(14)** formed on the tool housing from which, in operation of the tool, a stream of air emanates,

a vacuum debris removal apparatus comprising, in accordance with the invention,

a vacuum ejection nozzle **(18)**;

means **(20, 22, 34, 40)** defining a Venturi and suction or underpressure chamber for cooperation with said vacuum ejection nozzle;

a suction duct **(78)** connectable to the suction or underpressure chamber to have suction applied thereto in operation of the tool;

and a suction nozzle **(60)** positionable to surround a portion of the reciprocating cutting head **(42)** of said tool and connectable with said suction duct **(78)**,

said vacuum injection nozzle having means **(26)** for attachment of the nozzle to a tool to place the nozzle into air flow communication therewith, the suction nozzle **(60)** comprising a nozzle body having means **(62, 64, 66)** for attachment of said suction nozzle to a tool and surrounding the cutting head thereof.

4,361,958

RETRACTABLE BLADE KNIFE

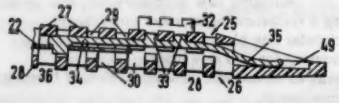
Richard Gilbert, Sheffield, England, assignor to Stanley Tools Limited, Sheffield, England

Filed Nov. 3, 1980, Ser. No. 203,337

Claims priority, application United Kingdom, Nov. 19, 1979, 7939977

Int. Cl.³ B26B *1/08*

U.S. Cl. 30—162 **3 Claims**



1. A retractable blade knife comprising a handle, a blade and a blade-slider, the handle being in one elongate piece of molded material adapted for the slider to be detained in selectively different positions along the handle for extending and retracting the blade, which is adapted for successive portions thereof to be broken off and discarded when worn, characterised in that the handle is formed on each of the two opposite sides with wall portions alternating with apertures, the wall portions on each side being directly opposite the apertures on the opposite side, the wall portions on one of said sides of the handle having gaps therein for the passage along the handle of a manually operable part of the slider, the wall portions on one of said sides of the handle forming detents for holding the slider in its selected position along the handle.

4,361,959

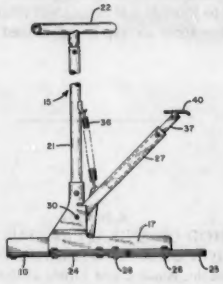
BRUSH CUTTER

John R. Akerson, Box 115, Grandy, Minn. 55029

Filed Apr. 15, 1981, Ser. No. 254,400

Int. Cl.³ A01G *3/00*

U.S. Cl. 30—231 **8 Claims**



1. A brush cutter for enabling a user to cut brush at the ground level while remaining erect, comprising, in combination:

a first normally horizontal blade having a first transverse edge;

support means, including an elongated handle generally orthogonal to said blade, to enable positioning of said edge against a stalk to be cut;

a second blade having a second transverse edge;

means guiding said second blade for sliding with respect to said first blade, to bring said transverse edges together and thus sever a stalk positioned therebetween; and

a pedal connected to said second blade to cause sliding thereof.

4,361,960

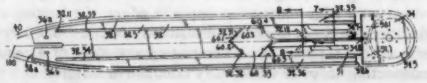
CHAIN SAW BAR WITH AUTOMATIC TENSIONING

James E. Halverson, Rte. One, Box 40, Hillsdale, Wis. 54744

Filed Nov. 24, 1980, Ser. No. 209,754

Int. Cl.³ B27B *17/12, 17/14*

U.S. Cl. 30—385 **32 Claims**



1. A chain saw guide bar assembly for use with a chain saw of the type of having an endless toothed chain, a frame, a drive sprocket rotatably mounted on said frame and supporting said chain, means for mounting said guide bar assembly to said frame such that said chain is guided by and moves along the periphery of said guide bar assembly in response to rotation of said drive sprocket; said guide bar assembly comprising:

(a) a bifurcated guide bar, comprising:

(i) an elongate primary guide member having a proximal

end configured for mounting to the frame adjacent the drive sprocket and an oppositely disposed distal end, whereby said primary guide member when mounted to said frame extends from said frame in cantilevered manner toward said distal end;

(b) means for movably connecting said nose guide member to said primary guide member at said distal end thereof for movement with respect thereto substantially only in the axial direction of said primary guide member; whereby the chain will operatively move along the outer peripheries of the primary and the nose guide member;

(c) biasing means enclosed within said bifurcated guide bar for automatically applying uniform predetermined tensioning forces to the cutting chain by controllingly urging said nose guide member primarily in the axial direction away from the distal end of said primary guide bar member; wherein said biasing means is shielded from the external environment of said bifurcated guide bar during operation thereof; and

(d) means for preventing accummulation of sawdust and foreign matter during operation of said bar assembly that would impede the relative operative movement of said primary and nose guide members and the operation of said biasing means, whereby said uniform predetermined tensioning forces to the cutting chain are maintained.

4,361,961

DEVICE FOR MEASURING THE ANGULAR ORIENTATION OF HORIZONTAL BORES

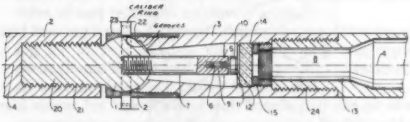
Heinz Fuchs, Recklinghausen, Fed. Rep. of Germany, assignor to Ruhrkohle AG, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 92,948, Nov. 9, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,405

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849147

Int. Cl.³ E21B *47/02*

U.S. Cl. 33—1 H **7 Claims**



1. Device for measuring the angular orientation of horizontal bores, comprising two discrete tubular elements having respective ends axially adjacent one another, a ball-and-socket joint in one of said adjacent ends for connecting said tubular elements with freedom of relative angular displacement and having one rigid extension projecting from said one end into and being anchored in the other of said ends, and a second rigid extension located on the longitudinal center axis of one of said tubular elements and projecting from said joint into the other of said tubular elements, said second rigid extension having a free end portion spaced from said joint, a support member adjacent said free end portion; an angle-measuring device carried by one of said support member and said free end portion; said device being operative for detecting the occurrence and magnitude of successive relative angular inclinations of the longitudinal center axes of said tubular elements and including a center of gravity oriented pendulum, and optical discrete means operative for optically detecting a continuing record of information provided by said measuring device.

4,361,962

ARRANGEMENT TO BE USED IN A CONTINUOUS CASTING PLANT

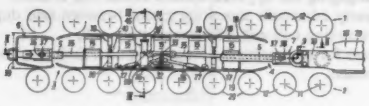
Werner Scheurecker, Linz; Josef Wirth, Leonding, and Alois Scheinecker, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 2, 1980, Ser. No. 193,368

Claims priority, application Austria, Oct. 22, 1979, 6872/79

Int. Cl.³ G01B *5/00*

U.S. Cl. 33—143 L **19 Claims**



1. In an arrangement to be used in a continuous casting plant of the type including two oppositely arranged roller ways forming a section between them and each roller way being formed by a plurality of rollers, a measuring body for measuring the distance between the two oppositely arranged roller ways being provided, which measuring body is adapted to be moved between the section formed by the two oppositely arranged roller ways and includes a distance-measuring device fastened within said measuring body and oppositely arranged contact surfaces, said rollers having surface areas to be contacted by said contact surfaces, the improvement which is characterized in that said oppositely arranged contact surfaces of said measuring body are formed by elastically deformable spring steel strips having a longitudinal extension that is longer than the axial distance of three neighbouring rollers in one roller way, and in that pressure units are provided between said spring steel strips for pressing said spring steel strips against said surface areas of said rollers, said distance-measuring device contacting the inner side of a spring steel strip.

4,361,963

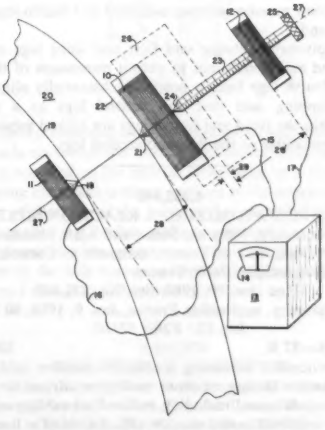
DIFFERENTIAL NONMETALS THICKNESS GAUGE

Leroy R. Hause, Seattle, and Dean Y. Tsuchida, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 6, 1980, Ser. No. 204,493

Int. Cl.³ G01B *7/06*

U.S. Cl. 33—143 L **7 Claims**

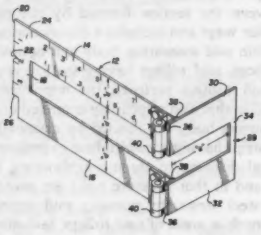


1. A gauge for determining the thickness of a nonmetallic article comprising:

an AC signal generator;

a transmitting coil connected to said generator;
a first receiving coil and a duplicate receiving coil, each axially aligned with said transmitter coil on opposite sides thereof and each adapted to receive AC signals therefrom;
means for delivering AC signals from said first receiving coil and from said duplicate receiving coil to a comparison means:
a first means extending from said first receiving coil for engaging one surface of an article whose thickness is to be determined;
a second means extending from said transmitting coil for engaging the opposed surface of the said article;
linearly adjustable mounting means between said duplicate receiving coil and said transmitting coil;
means for measuring the length of said adjustable mounting means.

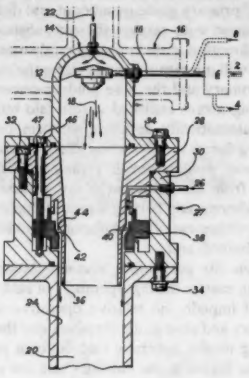
4,361,964
LAY OUT SQUARE
John W. Hennessee, 919 S. 8th, Lawton, Okla. 73501
Filed Mar. 3, 1981, Ser. No. 240,101
Int. Cl.³ B43L *7/06*
U.S. Cl. 33—478 **4 Claims**



1. A lay out square for use in constructing wall sections comprising:
first and second leg members having a width equal to that of the edge width of the construction members being used;
an end member joining said first and second legs to form a U-shaped member, the first and second legs being spaced apart a distance equal to the width of one leg;
third and fourth legs being equal in width to the first and second legs and being spaced to align with said first and second legs;
a connector member joining said third and fourth legs at one end; and
means pivotally joining said first and third legs and said second and fourth legs to permit movement of the third and fourth legs from a position substantially aligned and overlapping said first and second legs to a position wherein the third and fourth legs are locked substantially perpendicular to the first and second legs.

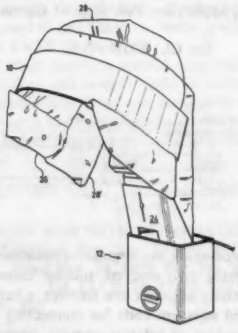
4,361,965
DEVICE FOR ATOMIZING A REACTION MIXTURE
Jean P. Goumondy, Vitry sur Seine, and Alain Hanssens, Bagnols sur Ceze, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Dec. 30, 1980, Ser. No. 221,441
Claims priority, application France, Jan. 9, 1980, 80 00392
Int. Cl.³ F26B *17/10*
U.S. Cl. 34—57 R **10 Claims**

1. A device for atomizing a reaction mixture said device being a reactor having an inner wall symmetrical around an axis of revolution and including means for enabling said mixture to be atomized in said reactor with the aid of at least a first gas acting in conjunction with an atomizing nozzle, and comprising a supply of a second hot gas introduced at the top of the atomizing device, above said nozzle, serving to dry the atomized mixture said first and second gases being directed generally downwardly toward the bottom of said reactor,
further comprising a supply of a third gas and means for introducing and distributing this third gas into said reactor at a point downstream of said nozzle in the direction of



flow of said first and second gases comprising an annular passage of adjustable width in the form of a ring along the inner wall of the reactor for distributing said third gas in the reactor so that the flow of said third gas prevents any contact between the atomized mixture and said wall at said point and downstream therefrom.

4,361,966
PORTABLE HAIR DRYER
John H. Downey, 5 Lofty Hillway, Willowdale, Ontario, Canada
Filed Dec. 29, 1980, Ser. No. 220,316
Int. Cl.³ A45D *20/18*
U.S. Cl. 34—99 **7 Claims**



1. In a portable hair dryer, hood structure comprising; air inflatable shaped bag means arranged to receive the head of a user in partially enclosed relation therein when in use; air blowing apertures perforating selected inner wall portions of the bag means, to direct air therefrom, when in use in blowing relation against the hair of a user; a flexible cantilever support band attached to the bag means in supporting relation forming an intergral part of the hood structure and having sufficient width to provide arcuate cantilevered support to the bag means; first portions of said bag means secured to the band extending in downward depending supported relation therefrom as a profiled skirt and second portions of said bag means extending upwardly from the band in supported relation therefrom to provide an air supported structure of sufficient depth

to at least partially enclose the top portion of said users head, releasable fastening means for securing the band in adjustable forwardly extending relation from a hood support structure to permit tilt adjustment of the hood relative to said rearwardly located support structure; to an air supply connection connected to the bag means for the passage of heated air into the bag means at a pressure sufficient to support said second bag portions.

4,361,967

DEVICE FOR COOLING FRESHLY-SOLDERED CIRCUIT BOARDS

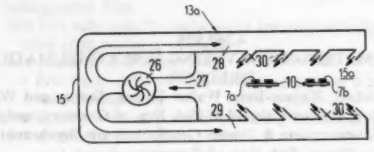
Heiner Bahnsen, Augsburg, and Dietrich Rumpf, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 22, 1980, Ser. No. 171,196

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932398

Int. Cl.³ F26B *15/10*

U.S. Cl. 34—151 **5 Claims**



1. In a device for cooling printed circuit boards after mechanical soldering of heat-sensitive electrical components into such boards with the aid of a cooling air stream which is circulated in a substantially closed circuit with the aid of a fan means and a means for transporting such board past the air stream, wherein the improvement comprises:

a somewhat C-shaped housing defining said closed circuit and positioned approximately perpendicular relative to a transport direction of said boards and embracing said means for transporting such boards at a distance with a pair of horizontally extending legs, each of said legs having air-outlet openings on surfaces thereof facing said boards, said air-outlet openings beings disposed at least at outer ends of said legs and being directed against opposite sides of said boards at an obtuse angle,

said housing having a central opening therein allowing cooling air to be sucked-in via said opening and expelled through said legs to said air-outlet openings to establish an air current about said circuit boards, and

said means for transporting such boards past the air stream comprising a transport means supporting freshly-soldered circuit boards only at their respective side edges in such a manner that opposite major surfaces of such boards are uncovered.

4,361,968

APPARATUS FOR POLYMERIZATION OF ADHESIVE RESIN APPLIED TO THE JUNCTIONS OF TENNIS RACKET NETTING

Aldo M. Robaldo, Corso Francia 33, Turin, Italy

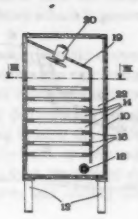
Filed Nov. 13, 1980, Ser. No. 206,671

Claims priority, application Italy, Jan. 11, 1980, 52826/80[U]

Int. Cl.³ F26B *9/06*

U.S. Cl. 34—196 **11 Claims**

1. For use with tennis rackets an apparatus for polymerization of adhesive resin applied to the junctions of tennis racket netting, the improvement comprising a parallelepipedic container having a plurality of superimposed compartments communicating with one another and each arranged to receive at least a portion of a racket, a source of heat arranged substantially below said compartments, means for circulation of air from said source of heat through said compartments, a passage means extending vertically through said container along one side thereof adjacent said superimposed compartments for conducting air flow from said compartments to said source of heat, a thermostat for maintaining the temperature within said compartments at a desired constant level, and a control timer,



and wherein each of said compartments has a front door mounted for pivotal movement about a horizontal axis on a pivot extending along its upper edge so that said door can pivot in both directions, said door being provided with a central cut-out portion to permit the handle of a racket to project therethrough.

4,361,969

SHOE WITH PNEUMATIC CUSHIONING CHAMBER

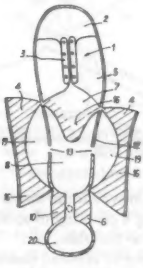
Christian Vermonet, Cholet, France, assignor to Societe a Responsabilite Limitee Technisynthese, Saint Pierre Montlimart, France

Filed Dec. 16, 1980, Ser. No. 217,177

Claims priority, application France, Dec. 28, 1979, 79 31937

Int. Cl.³ A43B *7/14, 13/20, 21/26, 19/00*

U.S. Cl. 36—88 **4 Claims**



1. A shoe comprising an upper and a sole, and in that portion of the sole on which the heel of the wearer bears, a chamber which is bounded on the interior of the shoe by a flexible wall, there being chambers in those portions of the upper that encase the rear of the foot of the wearer, these latter chambers also being bounded by flexible walls on the interior of the shoe, passageways of reduced cross section through which said chamber in the sole communicates with said chambers in the upper, and means to inflate said chambers.

4,361,970

KARATE FOOT PROTECTOR

Fred H. Wren, Jr., and Frank H. Babcock, III, both of St. Louis, Mo., assignors to Pro-Tect, Inc., St. Louis, Mo.

Filed Sep. 25, 1980, Ser. No. 190,880

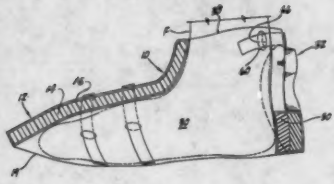
Int. Cl.³ A43B *5/00, 19/00*

U.S. Cl. 36—106 **3 Claims**

1. A foot protector, for karate combat comprising:

(a) a unitary body formed from a resilient foam core having a flexible outer casing, the body including:

1. a front portion adapted to cover the upper portion of the foot and the front sides thereof,
2. an open bottom portion defined by a lower margin,
3. a rear portion adapted to cover the ankle of one foot, including opposed side portions and an upper margin,



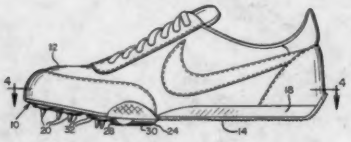
4. said side portions including opposed heel side margins extending downwardly from the upper margin and terminating upwardly of the lower margin to define separable upper side flap portions, outwardly bendable to permit entry of the foot, and a continuous connecting lower portion disposed about the lower heel, and
5. a strap connector element releasably connecting the upper side flap portions.

4,361,971

TRACK SHOE HAVING METATARSAL CUSHION ON SPIKE PLATE

William J. Bowerman, Eugene, Oreg., assignor to BRS, Inc., Beaverton, Oreg.

Filed Apr. 28, 1980, Ser. No. 144,197
Int. Cl.[3] A43B *5/00, 13/18, 23/28*
U.S. Cl. 36—129 18 Claims



1. A running shoe in which the improvement comprises:

a spike plate having a plurality of spike fastening means for attaching spikes to the plate; and

a cushioning member of resilient material different than the material of the spike plate secured to the lower surface of said plate, said cushioning member being positioned behind and separate from the rearmost spike fastening means and extending below the lower surface of the spike plate including surface portions surrounding said spike fastening means, said cushioning member being tapered in width longitudinally of the shoe with a greater width at the lateral side of the shoe than at the medial side of the shoe.

4,361,972

RIDER'S SHOE

Lawrence Miller, 299 NE. 28th St., Boca Raton, Fla. 33431

Filed Jul. 31, 1981, Ser. No. 289,053
Int. Cl.[3] A43B *5/00*
U.S. Cl. 36—131 9 Claims

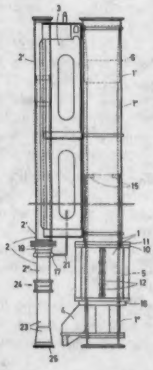
1. A cyclist's shoe comprising a relatively thick, lightweight, lower sole of high strength material provided with a transverse bore, said bore being tapered on the side nearest to the arch of the rider and said bore having such interior dimension as to accommodate the pedal shaft which is connected to the crank gear.

4,361,973

BULK MATERIAL CONVEYING FOR A PNEUMATIC DREDGER

Lothar Imhoff, Kerpen-Buir; Walter Hoppe, Duren, and Wilhelm Bay, Kerpen-Buir, all of Fed. Rep. of Germany, assignors to Zimmermann & Jansen Gesellschaft mit Beschrankter Haftung, Duren, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,084
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934119
Int. Cl.[3] E02F *3/88*
U.S. Cl. 37—58 7 Claims



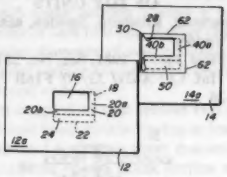
1. In a pneumatic dredger bulk conveyor of the type wherein a conveyor line is formed by a first circular outer tube and a first inner tube telescopically slidable therein and a pressure line is formed by a second outer tube fixed to said first outer tube and a second inner tube telescopically slidable in said second outer tube in coordinated movement with said first inner tube, the improvement which comprises an upper circular guide member formed at the upper end of said first inner tube and closely spaced from said first outer tube defining a first circular interspace therewith, said first inner tube having below said upper guide member a polygonal profile forming a second interspace with said first outer tube having a greater cross sectional area than said first interspace and constituted by a plurality of first segmented passages of greater width than said first interspace and each of which is bounded by an arc of said first outer tube and a plane of said polygonal profile.

4,361,974

UNIVERSAL DENTAL RADIOGRAPHIC FILM HOLDER

Nelson Wood, 1819 Beacon St., Brookline, Mass. 02146

Filed May 22, 1981, Ser. No. 266,204
Int. Cl.³ G09F 1/10
U.S. Cl. 40—158 B 5 Claims



1. A dental radiographic film holder, comprising

a substantially planar means, said planar means defining a first substantially rectangular opening for viewing an inserted radiographic film,

said first substantially rectangular opening including a widened edge entrance opening,

said planar means comprising

a first front sheet portion bordering at least a portion of said first opening,

a first back sheet portion bordering at least a portion of said first opening,

said first front and back sheet portions being substantially parallel, and spaced apart in a direction perpendicular to said planar means,

sections of said first front and back sheet portions remote from said widened edge entrance opening being detachably connected to said planar means to form a second, larger, opening when said first front and first back sections are detached.

a second front sheet portion bordering at least a portion of said second opening, and

a second back sheet portion bordering at least a portion of said second opening,

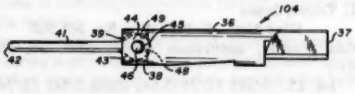
said second front and back sheet portions being substantially parallel, and spaced apart in a direction perpendicular to said planar means.

4,361,975

SEMIAUTOMATIC HAND GUN

Gary Wilhelm, Hamden, Conn., assignor to Llama Gabilondo Y. CIA. S.A., Spain

Division of Ser. No. 951,967, Oct. 20, 1978, Pat. No. 4,275,640. This application Jul. 31, 1980, Ser. No. 174,018
Int. Cl.³ F41C 19/00
U.S. Cl. 42—69 R 4 Claims



1. A articulated firing pin comprising:

an elongated body portion, said body portion having a hammer impact surface at a first end thereof, said body portion having a cavity extending inwardly from a second end thereof which is oppositely disposed with respect to said first end, the base of said cavity being defined by an arcuate seating surface;

an elongated detonation pin, said detonation pin having an axis and having its first end shaped to define a cartridge strike surface, the second end of said detonation pin being disposed along said axis and oppositely with respect to said strike surface, said second end of said detonation pin having an arcuate surface which is generally complimentary in shape to said body portion seating surface, said detonation pin second end being received in said body portion cavity with said arcuate surface in contact with said seating surface, said detonation pin further being provided with a bore which is generally transverse to said axis; and

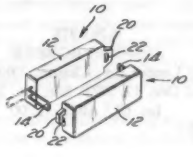
a retaining pin for securing said detonation pin to said body portion, said retaining pin extending through said detonation pin bore and being engaged by the cavity defining wall of said body portion, the cross-sectional area of said retaining pin being smaller than the cross-sectional area of said detonation pin bore, said retaining pin being spacially displaced from at least the side of said bore which is most closely spaced from said seating surface.

4,361,976

FISHING LINE SINKER AND MOLD FOR MAKING SAME

Joseph H. Svoma, 175 Kinman Ave., Apt. 7, Goleta, Calif. 93010

Filed Jun. 11, 1980, Ser. No. 158,371
Int. Cl.³ A01K 95/00
U.S. Cl. 43—43.1 2 Claims



1. A fishing line sinker comprising:

a first block of metal having a first fore end and a first aft end and a first inner side and a first outer side, a first wire member attached to and extending from said first fore end, a first opening formed within said first aft end, a first extension integrally attached to said first block, said first extension having a first inner sidewall and a first outer sidewall, said first inner sidewall of said first extension being flush with said first inner side, said first outer sidewall being spaced from said first outer side;

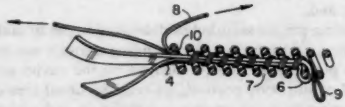
a second block of metal having a second fore end and a second aft end and a second inner side and a second outer side, a second wire member attached to and extending from said second fore end, a second opening formed within said second aft end, a second extension integrally attached to said second block, said second extension having a second inner sidewall and a second outer sidewall, said second inner sidewall of said second extension being flush with said second inner side, said second outer side wall being spaced from said second outer side; and

with said first block in a reversed side-by-side relationship with said second block with said first inner side abutting said second inner side, the said first wire member is located within said second opening and said second wire member is located within said first opening, both said first and said second wire members are then bent securing together said first block and said second block forming a single unit.

4,361,977
ATTACHMENT APPARATUS

Michael J. Lawler, 72 Larabee Crescent, Don Mills, Ontario, Canada (M3A 3E7)

Filed Jul. 28, 1980, Ser. No. 173,025
Int. Cl.[3] A01K *91/04, 93/00, 95/00*
U.S. Cl. 43—44.83 31 Claims

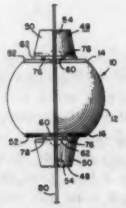


1. Attachment apparatus comprising, in combination:
a helical member having an axial aperture therethrough adapted to receive external connecting means, said member defined by a continuum of uniformly spaced, adjacent coaxial helixes disposed in longitudinally extended relation; and
a folded elastic strip disposed within said aperture in frictional engagement with at least one of the helixes to releasably affix said connecting means thereat, said strip having one end secured to the member and a grippable free end extending outwardly therefrom which, when stretched, releases said frictional engagement by reducing the cross-sectional dimensions of said strip, said dimensions being selected to permit said strip to pass transversely between the spaced helixes and to be wound coincidentally with the spaces therebetween to one end of the helical member, whereby said strip is caused to be disposed in said aperture.

4,361,978
FISHING BOBBER

Hugh Kane, 4950 Lander Rd., Chagrin, Ohio 44022

Filed Dec. 12, 1980, Ser. No. 215,820
Int. Cl.[3] A01K *91/00*
U.S. Cl. 43—44.87 4 Claims

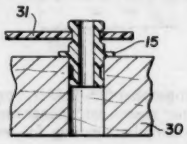


1. A fishing bobber which may be readily and adjustably secured to a fishing line without injury to the line, said bobber comprising
(1) a buoyant body having top and bottom ends with a central vertical axis extending therebetween said body having a slot extending from its outer surface inwardly toward and in alignment with the central vertical axis thereof and connecting the top and bottom ends,
(2) a bearing extending outwardly from one end of the body,
(3) line keeper means rotatably carried on the bearing, said line keeper means having a slot alignable with that in the body and line engaging means fixed on the line keeper means for rotation therewith,
(4) a resilient member carried by the bearing and being positioned thereon in alignment with the body slot and adjacent the line engaging means whereby when the line is positioned in the aligned body and line keeper means slots rotation of the line keeper means will cause the line engaging means to engage and force the line into frictional contact with the resilient member to retain the bobber in fixed position on the line, and
(5) means on the other end of the body for maintaining the line in the body slot.

4,361,979
CONNECTION ELEMENT FOR MAKING ASSEMBLIES OF TOY UNITS

Nils A. I. Petersson, Killeberg, Sweden, assignor to Brio Toy AB, Osby, Sweden

Filed Apr. 7, 1981, Ser. No. 251,885
Int. Cl.[3] A63H *33/10*; F16B *7/00*
U.S. Cl. 46—26 1 Claim



1. A connection element for connecting together toy units to make assemblies of a plurality of toy units, each provided with holes of substantially equal diameter, said connection element comprising in combination, parts of elastically deformable material having generally cylindrical shape and of a diameter to cause a tight fit when mounted in said holes, a flange of substantially larger diameter than the cylindrical diameter provided between two portions of generally cylindrical shape being arranged coaxially, said flange extending outwardly in directions perpendicular to the common axis of said generally cylindrically shaped portions and adapted to abut and support opposed surfaces of two toy units to be held together by the connection element, each of said two generally cylindrically shaped portions having a reduced outer diameter cylindrical axial section between its end and a spaced distance from the flange adapted to retain mount and bear thereon plate members to freely pivot without interference with adjacent toy units and to mate with apertures in the plate members of thickness less than the reduced outer diameter axial length, said portions and flange defining a continuous hole therethrough coaxial with the cylindrical portions and a slot through the axial length of the portions and flange to provide greater resiliency for positioning in the toy unit holes, said element is further provided with a single axially extending reduced thickness wall part located opposite said slot at each of the two said portions of generally cylindrical shape, but not the flange.

4,361,980
ROLLING TOY AND AXLE ARRANGEMENT

Yasushi Chatani, Tokorozawa, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,503
Claims priority, application Japan, Mar. 26, 1981, 56-41508[U]
Int. Cl.[3] A63H *17/26, 5/00*; B60B *5/00, 35/14*
U.S. Cl. 46—111 51 Claims

1. A male axle member, having a predetermined male axis and comprising, in combination:
a male shoulder portion having a preselected outer diameter;
a bearing portion coupled to said male shoulder portion and extending axially therefrom a first predetermined axial distance and having a predetermined outer diameter defining an outer surface and smaller than said preselected outer diameter of said male shoulder portion;
a coupling portion coupled to said bearing portion and extending axially therefrom a second predetermined axial distance and having a predetermined outer diameter defin-

ing an outer surface and smaller than said preselected outer diameter of said bearing portion; and

a headed engagement portion coupled to said coupling portion and extending axially therefrom a third predetermined axial distance, and said headed engagement portion having:

a shank section having a first end adjacent said coupling portion and a second end spaced axially from said first end, and said shank section having a predetermined outer diameter at said first end smaller than said predetermined outer diameter of said coupling portion, and having an outer surface extending between said first end and said second end; and

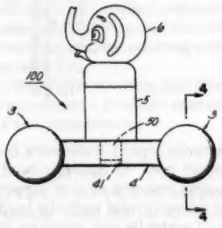
a head section coupled to said second end of said shank section and said head section having at least an engagement part thereof having an outer diameter larger than the outer diameter of said shank section at said second end thereof and smaller than said predetermined outer diameter of said coupling portion; and

said head section radially resiliently deformable between an engagement condition and an insertion condition.

18. A female axle member, having a predetermined female axis, and comprising, in combination:

a female shoulder portion having a preselected outer diameter;

a bearing portion coupled to said female shoulder portion, and extending axially therefrom a fourth predetermined axial distance, and having a predetermined outer diameter smaller than said preselected outer diameter of said female shoulder portion;



a compression portion coupled to said bearing portion and extending axially therefrom a fifth preselected axial distance, and having an outer diameter substantially the same as said outer diameter of said bearing portion;

a coupling portion, coupled to said compression portion, and extending axially therefrom a sixth predetermined distance and having an outer diameter substantially the same as said outer diameter of said bearing portions;

and

said female axle member having internal walls defining an internal aperture therethrough from said female shoulder portion to said coupling portion thereof, and said internal walls defining

a first internal surface in said shoulder portion and said bearing portion extending a preselected axial distance to define a boss receiving aperture having a first predetermined internal diameter;

a second internal surface in said compression portion having a second internal diameter adjacent said bearing portion and said second internal diameter smaller than said first internal diameter, and a third internal diameter in said compression portion adjacent said coupling portion; and

said second internal surface defining a first shoulder at said bearing portion and a second shoulder at said coupling portion;

a third internal surface in said coupling portion having a fourth internal diameter adjacent said compression portion greater than said third internal diameter.

36. An improved roll toy vehicle comprising, in combination:

a body member having a pair of axle means receiving apertures therethrough;

an axle means positioned within each of said pair of axle receiving apertures of said body member and each of said axle means comprising:

a female axle member having a predetermined female axis, and said female axle member comprising:

a female shoulder portion having a preselected outer diameter;

a bearing portion coupled to said female shoulder portion, and extending axially therefrom a fourth predetermined axial distance, and having a predetermined outer diameter smaller than said preselected outer diameter of said female shoulder portion;

a compression portion coupled to said bearing portion and extending axially therefrom a fifth preselected axial distance, and having an outer diameter substantially the same as said outer diameter of said bearing portion;

a coupling portion, coupled to said compression portion, and extending axially therefrom a sixth predetermined distance and having an outer diameter substantially the same as said outer diameter of said bearing portion;

and

said female axle member having internal walls defining an internal aperture therethrough from said female shoulder portion to said coupling portion thereof, and said internal walls defining

a first internal surface in said shoulder portion and said bearing portion extending a preselected axial distance to define a boss receiving aperture having a first predetermined internal diameter;

a second internal surface in said compression portion having a second internal diameter adjacent said bearing portion and said second internal diameter smaller than said first internal diameter, and a third internal diameter in said compression portion adjacent said coupling portion; and

said second internal surface defining a first shoulder at said bearing portion and a second shoulder at said coupling portion;

a third internal surface in said coupling portion having a fourth internal diameter adjacent said compression portion greater than said third internal diameter;

a male axle member having a predetermined male axis and positioned within said aperture of said female axle member and said female axis and said male axis colinear, and said male axle member comprising:

a male shoulder portion having a preselected outer diameter;

a bearing portion coupled to said male shoulder portion and extending axially therefrom a first predetermined axial distance and having a predetermined outer diameter defining an outer surface and smaller than said preselected outer diameter of said male shoulder portion;

a coupling portion coupled to said bearing portion and extending axially therefrom a second predetermined axial distance and having a predetermined outer diameter defining an outer surface and smaller than said predetermined outer diameter of said bearing portion; and

a headed engagement portion coupled to said coupling portion and extending axially therefrom a third predetermined axial distance, and said headed engagement portion having:

a shank section having a first end adjacent said coupling portion and a second end spaced axially from said first end, and said shank section having a predetermined outer diameter at said first end smaller than said predetermined outer diameter of said coupling portion, and having an outer surface extending between said first end and said second end; and

a head section coupled to said second end of said shank section and said head section having at least an engagement part thereof having an outer diameter larger than

the outer diameter of said shank section at said second end thereof and smaller than said predetermined outer diameter of said coupling portion; and

said head section radially resiliently deformable between an engagement condition and an insertion condition, and said head section of said headed engagement portion of said male axle member positioned within said internal surface of said bearing portion of said female axle member, and said outer dimension of said engagement part of said head section of said headed engagement portion of said male axle member larger than said second internal diameter of said compression portion of said female axle member in said engagement condition thereof;

said internal surface of said compression portion of said female axle member engaging said outer surface of said shank section of the headed engagement portion of said male axle member;

said internal surface of said coupling portion of said female axle member engaging said outer surface of said coupling portion of said male axle member;

said male shoulder portions and said male bearing portion have internal walls defining an axially extending boss receiving aperture therein, and said boss receiving aperture having a predetermined axial extent and a diameter smaller than said predetermined diameter of said male should portion and said bearing portion; and

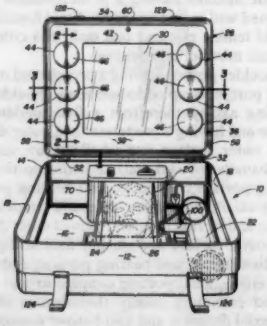
a pair of wheel means mounted in each of said pair of axle means and each of said wheel means having a body portion, a shoulder portion coupled to the body portion, and having a predetermined outer diameter larger than said axle receiving apertures in said body member, and a boss extending outwardly from said shoulder portion and said boss having an outer diameter for a predetermined frictional engagement with said boss receiving apertures of said male axle member and said female axle member.

4,361,981

TOY MAKE-UP CENTER

Walter S. Reiling, Livingston, N.J.; Kwok W. Tsui, and Johnny S. C. Yuen, both of Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Jun. 1, 1981, Ser. No. 268,777
Int. Cl.³ A63H *33/26*
U.S. Cl. 46—228 **12 Claims**



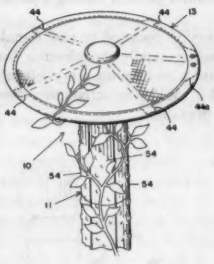
1. A toy make-up center comprising a box-like case having a front and back, a flat shell-like top of limited depth hingedly connected at one edge to the back edge of said box, a limited number of compartments in said case adapted to contain beautician accouterments, a second flat shell interfitted in inverted manner within said top shell with the bottom thereof outermost, a mirror supported centrally upon the outer surface of said second shell, said top being adapted to be moved to vertical position perpendicular to the plane of the top of said case to expose one of said compartments which is along the back of said case to support batteries therein, a row of at least three transparent bulbous globe members in said second shell along each side edge of said mirror, a single electric light bulb mounted in said second shell rearwardly of each row of globes and adjacent the center globe of each row thereof, an elongated reflector behind each row of said globes and said electric light bulb therefor, each reflector having interconnected reflecting surfaces respectively behind each globe and said bulb thereby being adapted to reflect light from said single bulb into the surface behind each globe and simultaneously through all of said globes to give the appearance of a separate bulb behind each globe in said rows to illuminate said mirror, and an electric circuit rearwardly of said mirror connecting said batteries and bulbs and including a switch to control lighting of said bulbs to illuminate said mirror from the opposite side edges.

4,361,982

UMBRELLA TOPIARY FRAMEWORK

Alvin E. Horowitz, 2320 SW. 23rd Ave., Miami, Fla. 33145

Filed Jan. 30, 1981, Ser. No. 229,895
Int. Cl.³ A01G *17/06*
U.S. Cl. 47—45 **3 Claims**



1. An umbrella topiary framework comprising, in combination, a support post, an umbrella head assembly, means for interconnecting one end of said support post with said umbrella head assembly, said umbrella head assembly comprising a plurality of umbrella arm members extending radially outwardly of said interconnecting means, a circular umbrella pad supported from underneath upon said umbrella arm members, means for securing outer peripheral edge portions of said umbrella pad with respect to the outer ends of said radially-outwardly-extending umbrella arm members, said umbrella pad being fabricated of porous material for reception therewithin of the tendrils or the like of vine-like plants climbing over surface portions thereof, said umbrella pad comprising a pair of face-to-face layers of foranamous material sandwiching thereinbetween a layer of sphagnum moss, said support post being fabricated of a synthetic plastic material the outer surface of which simulates tree bark providing protuberances and crevices for the support of the tendrils or the like of climbing vines, said interconnecting means comprising a cylindrical union, a radially-extending flange at one end of said union, and a plurality of radially-extending, peripherally-spaced slots at the other end thereof, means for removably securing said one end of said support post with respect to said radially-extending flange, the inner ends of said umbrella arm members being removably receivable in one each of said radially-extending slots, means for releasably locking said umbrella arm members with respect to said cylindrical union, said means for releasably locking said umbrella arm members comprising a central opening at the other end of said union, a circular locking cap having a concentric tubular locking pin extending outwardly thereof and receivable in said central opening, and a plurality of flexible catch members extending partially inwardly of said central opening and operative to press into peripheral wall portions of said tubular locking pin to frictionally retain said locking cap in

place, said locking cap further comprising a circular skirt portion surrounding said tubular locking pin and operative to fit into vertically-extending recesses provided at inner end portions of said umbrella arm members.

4,361,983

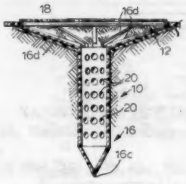
WATER AND FERTILIZER DISPENSER FOR PLANTS

Gary M. Wilson, 1028 Shaddelee La., Ft. Myers, Fla. 33907

Filed Nov. 12, 1980, Ser. No. 205,923

Int. Cl.³ A01G *9/10*

U.S. Cl. 47—48.5 **2 Claims**



1. A device that is useful in landscaping to provide a visually hidden subterranean dispenser for water and fertilizer comprising:

an elongated, hollow, chamber, said chamber having a plurality of apertures disposed through its surface,

said chamber having a pointed, end tip disposed at one end, and an opening at the opposite end;

a frusto-conically shaped compartment centrally connected at one end to said chamber opening; and

a top mountable over said frusto-conical compartment, said top having a plurality of holes disposed therethrough,

whereby said device may be used for watering and fertilizing subterranean areas, and

a plurality of raised ribs, disposed within said frusto-conical compartment, for supporting a fertilizer, spaced above the interior surface of the compartment.

4,361,984

MICROPROPAGATION OF PLANT MATERIAL

David I. Dunstan, Winfield; Keith E. Turner, Kelowna, and David W. Lane, Summerland, all of Canada, assignors to Kelowna Nurseries Ltd., Kelowna, Canada

Filed Aug. 6, 1981, Ser. No. 290,544

Int. Cl.³ A01G *1/00*

U.S. Cl. 47—58 **14 Claims**

1. A process for the micropropagation of plant material comprising:

excising a shoot tip having a length in the range 0.6 to 3 millimeters from a bud of the plant;

placing the excised tip in a first nutrient medium containing benzyl adenine to induce shoot elongation;

decapitating the elongated shoot;

placing the decapitated shoot in a nutrient medium to stimulate lateral shoot induction and elongation;

excising shoots one centimeter or more; and

implanting the excised shoots in a rooting nutrient medium for root production.

4,361,985

HYDRAULIC DOOR OPENING/CLOSING AND LOCKING/UNLOCKING APPARATUS

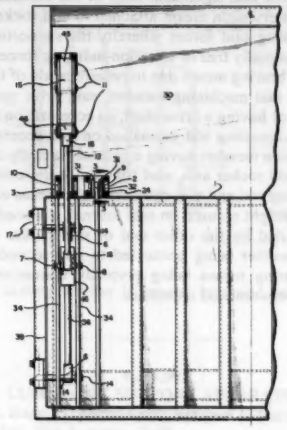
Thomas M. DeMarco, Chicago, Ill., assignor to NFE International Ltd., Chicago, Ill.

Filed Dec. 8, 1980, Ser. No. 213,928

Int. Cl.³ E05F *15/00*

U.S. Cl. 49—280 **10 Claims**

1. In hydraulically operated door apparatus for opening and closing a hinged door on a door frame, including at least one hydraulic piston/cylinder operatively connected between the door and the frame, the improvement comprising door locking/unlocking means actuated by said hydraulic piston/cylinder for locking the door upon closing thereof and unlocking



the door prior to opening thereof, and wherein during said locking and unlocking the door is restricted to horizontal, substantially parallel movement with respect to said door frame.

4,361,986

DEVICE FOR SURFACE MACHINING

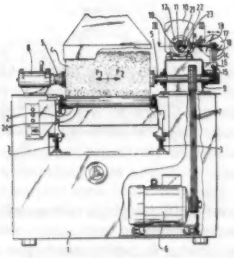
Jacob A. van der Linden, Goes, Netherlands, assignor to Machinefabriek A. van der Linden B.V., Goes, Netherlands

Filed May 28, 1980, Ser. No. 153,909

Claims priority, application Netherlands, Jun. 5, 1979, 7904403

Int. Cl.³ B24B *7/12*; A47L *25/00*

U.S. Cl. 51—34 R **2 Claims**



1. A device for surface-machining a workpiece, which comprises a supporting framework including means supporting a workpiece for movement along a rectilinear path; a rotatable machining member having significant mass and means for rotating such machining member about an axis extending crosswise of said path but in spaced parallelism thereto so that said machining element engages an exposed surface of the workpiece as the workpiece moves along said path; means for reciprocating said machining member back and forth along said axis whereby the combined rotary and reciprocatory motion of the machining member effects surface-machining of said exposed surface of the workpiece; said means for reciprocating including a rocker arm pivotally connected to said machining member, bearing means pivotally mounting said rocker arm on said frame, and drive means for oscillating said

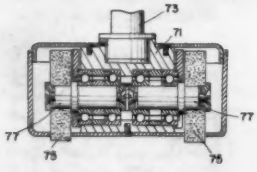
rocker arm whereby said bearing means and consequently said supporting framework tends to be subjected to forces which cyclically reverse directions and vary in amplitude due to reciprocation of said significant mass of the machining member; and counterweight means attached to said rocker arm for counterbalancing said forces whereby the supporting framework is substantially free of vibration-inducing forces imposed through said bearing means due to reciprocation of the significant mass of said machining member, said drive means comprising a motor having a drive shaft, an eccentric on said drive shaft and a connecting rod journalled on said eccentric, there being a trunnion member having a journal pivotally carried by one end of said rocker arm, said trunnion being connected to said connecting rod and said counterweight means comprising at least one weight secured on said journal, a second trunnion pivotally carried by the other end of said rocker arm, said machining member being connected to said second trunnion and said bearing means being pivotally connected to said rocker arm between said trunnions.

4,361,987

APPARATUS FOR HIGH TOLERANCE POLISHING OF A WORK-PIECE SURFACE

Itzchak Lapsker, Givatayim, Israel, assignor to GAL International Industries Inc., Forest Hills, N.Y.

Continuation-in-part of Ser. No. 832,623, Sep. 12, 1977, abandoned. This application Jan. 22, 1980, Ser. No. 114,297
Claims priority, application Israel, Oct. 29, 1976, 50794
Int. Cl.³ B24B *5/00*
U.S. Cl. 51—90 **15 Claims**



1. Apparatus for effecting high tolerance finishing of a workpiece surface comprising:

a mounting member including attachment means suitable for attachment to rotary drive apparatus for rotation of the mounting member about a first axis;

at least one resilient abrasive finishing element rotataby mounted on said mounting member for motion relative to said workpiece surface in a plane perpendicular to said first axis;

bearing means supporting said at least one finishing element on said mounting member for free rotation of said at least one finishing element relative to said mounting member; and

means for collecting particulate matter generated during a finishing operation from wear of said finishing element mounted on said mounting member;

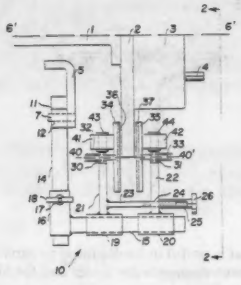
said at least one resilient abrasive finishing element comprising an annular body of uniformly intermixed resilient and abrasive substances.

4,361,988

BRAKE DISC GRINDING METHOD AND APPARATUS

Hans Gramlich, 4 Melanie Dr., Unit 15, Mississauga, Ontario, Canada (L5S 1H2)

Continuation-in-part of Ser. No. 163,012, Jun. 25, 1980, abandoned, which is a continuation of Ser. No. 940,975, Sep. 11, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 214,467
Claims priority, application Canada, Jun. 29, 1978, 306470
Int. Cl.³ B24B *23/02*
U.S. Cl. 51—118 **22 Claims**



1. Apparatus for regrinding a vehicle brake disc mounted on a vehicle which apparatus comprises:

a rotatably abrading disc having an abrading face and being fixedly mounted for rotation about an axis at right angles to said face;

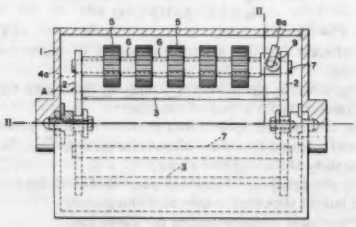
means for mounting such abrading disc from a portion of a vehicle which is fixed relative to the axis of the brake disc, such that said abrading face is positioned for rotation on a side of such brake disc in face-to-face frictional contact with such brake disc.

4,361,989

POLISHING APPARATUS

Tetatsu Ohno, 1-2, 1-chome, Kasuya, Setagaya-ku Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,214
Claims priority, application Japan, Sep. 13, 1979, 54-117650
Int. Cl.³ B24B *31/04*
U.S. Cl. 51—164.1 **1 Claim**



1. An improvement in rotatable barrel polishing apparatus containing a polishing bath for circulating about workpieces to polish them as the barrel rotates about an axis, comprising in combination, workpiece support means disposed axially within the barrel holding separated side plates positioned at opposite ends of the barrel in the polishing bath to rotate inside the barrel in response to rotation of the barrel, fixtures in said side plates adapted to removably hold a plurality of longitudinally disposed workpiece retaining members in place between said side plates, rod shaped workpiece retaining members supporting workpieces thereon held in place in said fixtures for rotation within said barrel with said workpiece support means wherein said side plates include notches formed therein for

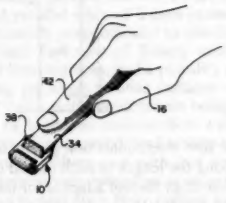
receiving said rod shaped members, and the fixtures comprise an L-shaped shaft equipped with an eccentric ring, a groove in said rod like members near one end, supporting plates formed with through holes at the both sides of one of the notches mounted on at least one side plate for disposing the L-shaped shaft perpendicular to the axis, wherein the L-shaped shaft is inserted into said through holes and engages said groove to retain the shaft in one of said notches with the eccentric ring disposed for forced contact with the side plate thereby to removably retain the rod shaped member for removal by rotation of the eccentric ring by means of the L-shaped shaft.

4,361,990

SANDPAPER HOLDER

Reinhold G. Link, Dayton, Ohio, assignor to Linkspiel, Inc., Dayton, Ohio

Filed Nov. 28, 1980, Ser. No. 210,980
Int. Cl.³ B24D *15/04*
U.S. Cl. 51—392 **3 Claims**



1. A sanding tool comprising:

a holder having a handle portion and a spatulate portion extending from said handle portion and having an end opposite said handle portion, said spatulate portion having a firm backing surface, a first transverse slot therethrough adjacent said end, and a second transverse slot therethrough between said first slot and said handle portion; and

a flexible strip of material, at least one side thereof coated with an abrasive, said strip extending along said handle portion, through said second slot, over said backing surface and said end, through said first slot, and back through said second slot, such that said strip is held in position on said holder during use, yet may be adjusted to bring a different portion over said backing surface and end.

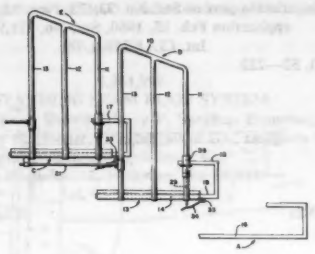
4,361,991

SEATING AND GUARD RAIL STRUCTURE FOR BLEACHERS

Harold Wiese, North Highland, Box 236, Madison, S. Dak. 57042

Filed Mar. 24, 1980, Ser. No. 132,974
Int. Cl.³ E04H *3/12*
U.S. Cl. 52—9 **9 Claims**

1. A seating and guard rail structure comprising a first seating section and a second seating section, said first seating section being movable rearwardly into said second seating section to compact said structure for storage, a guard rail unit attached to said first seating section, and means automatically operable to move said guard rail unit outwardly to one side of said first seating section to a position in which said guard rail unit is slanted outwardly toward the upper portion of the unit when said first seating section is moved into said second seating section.

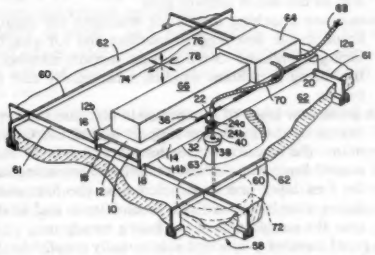


4,361,992

LUMINAIRE SUPPORT APPARATUS

William J. Rapp, Hayward, Calif., assignor to Gardco Manufacturing, Inc., San Leandro, Calif.

Filed Jan. 12, 1981, Ser. No. 223,984
Int. Cl.³ E04B *5/52*; H02G *3/26*
U.S. Cl. 52—28 **6 Claims**



1. In a suspended ceiling construction having a plurality of intersecting support members defining a lattice structure in a horizontal plane and a plurality of ceiling tiles adapted to be received within the openings of the lattice structure, a support apparatus for suspending and selectively positioning a pendant luminaire having a mounting stem projecting upwardly from the luminaire, said support apparatus comprising:

a base including means for demountably supporting said base in linear slidable engagement on said lattice structure, the linear slidable engagement being along a first selected axis parallel to the plane of the lattice structure;

a generally cylindrical stem defining a second selected axis, said stem including a first end portion, a second end portion and a body portion disposed between said first and second portions, said body portion being axially dimensioned commensurate with the thickness of said ceiling tiles;

means for mounting said first end portion to said base, said mounting means being operative to align said second axis substantially perpendicular to said first axis, said base further including means for selectively receiving said mounting means along a third selected axis orthogonal to said first and said second axis; and

bracket means for attaching the mounting stem to said second end portion, and operative to axially align or offset the mounting stem to said second end portion.

4,361,993

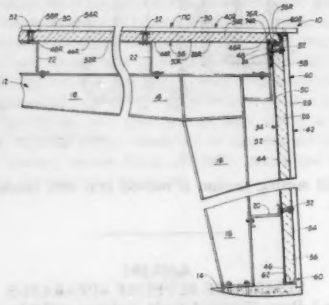
FRAMELESS ENCLOSURE ASSEMBLY

Harold G. Simpson, Oklahoma City, Okla., assignor to Encon Products, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 93,173, Nov. 13, 1979. This application Feb. 15, 1980, Ser. No. 121,920

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—222 **91 Claims**



1. A frameless enclosure assembly supported by the structural assembly of a pre-engineered building having a first support member and a second support member, the enclosure assembly comprising:

a flexible facing membrane having a first end, a second end and an insulation support side;

membrane attaching means for attaching the facing membrane to the first support member and for attaching the facing membrane to the second support member so that the facing membrane extends substantially taut therebetween;

an insulation layer of compressible insulation material supported by the insulation support side of the facing membrane, the insulation layer having a first layer end and a second layer end, the insulation layer extending such that the first layer end is disposed near the first end of the facing membrane and the second layer end is disposed near the second end of the facing membrane;

a panel member positioned substantially parallel to the insulation layer so that the insulation layer is disposed between the panel member and the structural assembly; and

panel securing means for securing the panel to the structural assembly, the panel securing means transferring load from the panel member to the structural assembly while the insulation layer substantially uniformly retains its resistance to heat transfer, and remains unpenetrated by the membrane attaching means in that section of the layer overlying the taut section of the facing membrane.

4,361,994

STRUCTURAL SUPPORT FOR INTERIOR WALL PARTITION ASSEMBLY

Tommy L. Carver, 8724 Wilkinson Blvd., Charlotte, N.C. 28208

Filed Aug. 11, 1980, Ser. No. 177,254

Int. Cl.³ E04H *1/00*

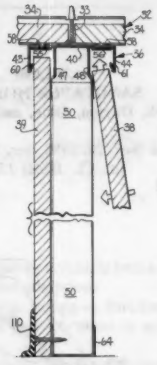
U.S. Cl. 52—238.1 **11 Claims**

1. A structural support adapted for extending along and supporting the edges of two parallel, spaced apart panels of wallboard or the like to form a hollow wall in an interior wall partitioning system, and characterized by the further ability to interconnect with other structural members of different configurations to form a variety of structural components, said structural support comprising

an elongate backwall having opposite side edges extending longitudinally along the length thereof,

a pair of elongate parallel integral outer flanges extending along the length of respective ones of said edges and defining parallel spaced apart planes which are generally perpendicular to said backwall, said outer flanges each including a free edge, and with said free edges collectively lying in a common plane which is perpendicular to the planes defined by said outer flanges,

a pair of elongate parallel integral inner flanges extending along said back wall and positioned between and parallel to said pair of outer flanges, said inner flanges being spaced from each other in the widthwise direction, and each inner flange being spaced from a corresponding outer flange a distance adapted for receiving the edge of a wallboard panel or the like therebetween,



elongate first interconnection means formed in and extending along the length of each of said outer flanges adjacent said free edge thereof adapted for interconnecting a cooperating structural component to said outer flanges, said first interconnection means comprising a laterally facing channel formed in each of said outer flanges, with said channels facing outwardly away from each other, and

elongate second interconnection means formed in and extending along the length of said backwall adapted for interconnecting a cooperating second structural component on the side of said backwall opposite said outer and inner flanges.

4,361,995

U-SHAPED PLASTERBOARD

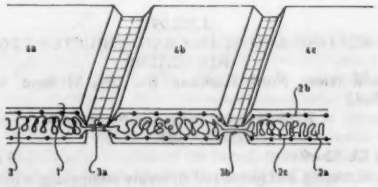
Yves Buck, Clermont en Beauvaisis, and Adrien Delcoigne, Chantilly, both of France, assignors to Isover Saint-Gobain, Neuilly, France

Filed Feb. 4, 1980, Ser. No. 118,099

Claims priority, application France, Feb. 5, 1979, 79 02922

Int. Cl.³ E04C *1/00*

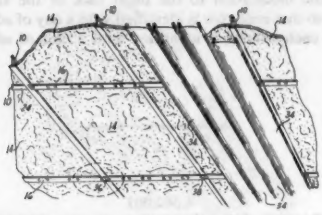
U.S. Cl. 52—309.17 **29 Claims**



1. A construction element of plaster comprising: a plate having opposed faces, reinforcements distributed throughout the greater part of the thickness of the plate, and folding lines parallel to the faces of the plate comprised of the reinforce-

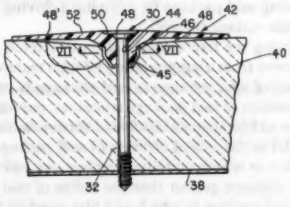
ments concentrated by compression to a reduced thickness separating the plate into a plurality of articulated panels.

4,361,996
CEILING RENOVATION SYSTEM
Robert L. Smith, Samsonville, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.
Filed Dec. 20, 1979, Ser. No. 105,609
Int. Cl.³ E04B 5/52
U.S. Cl. 52—484 **1 Claim**



1. In combination with a suspended ceiling: a grid of interconnected T-bars including parallel rows of T-bars extending in a first direction, and parallel rows of T-bars extending in a second direction substantially perpendicular to said first direction and intersecting said first row of T-bars, said rows of T-bars having exposed head surfaces, and a plurality of covers affixed to and covering the exposed head surfaces of one of said parallel rows of T-bars, each of said covers being a metallic body substantially of U-shaped cross-section with a main body portion engaging with an exposed head surface of a T-bar of said one parallel row of T-bars, and with first and second parallel leg portions, respectively extending at an acute and a right angle with respect to said main body portion and engaging with opposite edges of said exposed head surface, portions of said second leg portions being depressed into clamping engagement with said T-bar, a plurality of sets of spaced tabs at each of said main body portions, and a plurality of ceiling panels, respectively suspended from said covers by respective ones of said sets of tabs.

4,361,997
FASTENER PLATE AND ASSEMBLY
Charles J. DeCaro, Pittsburgh, Pa., assignor to Textron Inc., Providence, R.I.
Filed Feb. 25, 1980, Ser. No. 124,233
Int. Cl.³ E04B 1/62; E04D 3/36
U.S. Cl. 52—512 **15 Claims**



1. A plastic plate suitable for use with a fastener to secure insulation to a metal roof deck, said plate comprising:

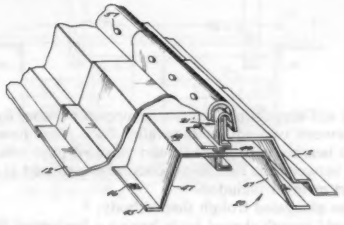
A. a substantially planar portion having top and bottom surfaces;

B. a hub portion for receiving said fastener in force-fit relationship and depending from said bottom surface of said planar portion in a central part thereof and shaped to penetrate into said insulation and permit surface contact with the insulation about said hub and bottom surface;

C. an opening in at least the upper surface of said planar portion coaxial with the hub portion for aligning said fastener as it is being driven through said hub portion in force-fit relationship; and

D. anti-rotational means depending from said bottom surface for engagement with said insulation during driving of said fastener.

4,361,998
STANDING SEAM ROOF SYSTEM
Burlan E. Ellison, Duluth; Harry P. Spranca, Dunwoody, and Christopher C. Hooper, Decatur, all of Ga., assignors to Atlantic Building Systems, Inc., Atlanta, Ga.
Filed Jul. 12, 1979, Ser. No. 56,943
Int. Cl.³ E04D 1/34
U.S. Cl. 52—520 **12 Claims**



1. A standing seam roof system adapted for installation on the framing of a building including purlins for supporting the roof system, said system comprising:

a plurality of panels, each panel having first and second raised edges extending generally longitudinally thereof, said first and second edges being substantially parallel to each other;

a plurality of clip means disposed at spaced points along the purlins and operatively rigidly attached thereto and for supporting adjacent first and second raised edges of a pair of adjacent panels; each said clip means including a tab member dimensioned to fit between said first and second raised edges of said pair of adjacent panels; a base member rigidly attached to a purlin; means for mounting said tab member to said base member so that relative movement therebetween is allowed parallel to said panel edges; and

means for fastening said first and second raised edges of said adjacent panels together along the length thereof, with said tab members of said clip means disposed therebetween at said spaced points along said purlins; wherein the improvement comprises:

each said clip means base member including a pair of bottom portions parallel to the purlin with which they are associated, a pair of middle portions slanting upwardly from said bottom portions, and a top portion parallel to said purlin and interconnecting said middle portions and for engaging said adjacent panels adjacent said first and second edges thereof and having a longitudinally elongated opening formed therein for receipt of said tab member; and

wherein each said tab member includes: a first end portion adapted to be disposed between said first and second raised edges of adjacent panels; an upstanding body portion extending perpendicularly to said base member top portion; a second end portion extending perpendicularly to said body portion from one face thereof, and parallel to said base member top portion and disposed below said base member top portion; and an intermediate flange extending parallel to said second end portion from both faces from said body portion and disposed above said second end portion along said body portion a distance slightly greater than the thickness of said base member top portion; said body portion having a width, where it ex-

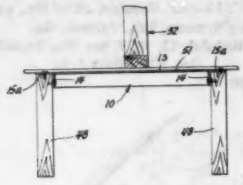
tends through said longitudinally elongated opening, less than the length of said longitudinally elongated opening.

4,361,999

SELF-SUPPORTING TRANSVERSE PARTITION WALL SUPPORT

Albert W. Sidney, 18433 Westbrook Dr., Livonia, Mich. 48152

Filed Sep. 19, 1980, Ser. No. 188,983
Int. Cl.³ E04C *3/00, 5/18*
U.S. Cl. 52—696 **7 Claims**



1. A self-supporting, transverse support member for mounting between two adjacent, parallel floor joists to support a weight bearing partition wall concentrated load which is disposed between the two floor joists, characterized in that said support member includes:

(a) an elongated trough shaped body;

(b) said trough shaped body having a horizontal flat upper end provided with floor engaging means along the entire length thereof for supporting a building floor which carries a weight bearing partion wall concentrated load;

(c) integral attachment means on each end of said trough shaped body; and,

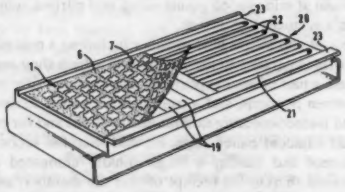
(d) means for securing the attachment means on each end of said trough shaped body to an adjacent floor joist.

4,362,000

PROCESS AND PLATFORM APPARATUS FOR PRODUCING PACKAGING ELEMENT

Albert C. G. Poore, New Malden, England, assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 43,095, May 29, 1979, Pat. No. 4,254,871. This application Oct. 8, 1980, Ser. No. 195,111
Claims priority, application United Kingdom, May 30, 1978, 24381/78
Int. Cl.³ B65B *67/02, 25/00*
U.S. Cl. 53—411 **3 Claims**



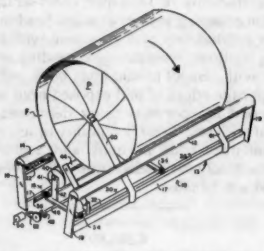
1. A process for preparing a package for containing and dispensing a multi-day course of medication on a daily basis comprising a plurality of prepackaged blister strips mounted on a supporting lamina member so that the blisters form a matrix with the medication for one day of the course contained within the blisters of one row of the matrix, said supporting lamina member being foldably joined to a backing lamina member, said supporting and backing members being further characterized in that the inner face of each said supporting and backing members bears a compatible pressure-sensitive adhesive capable of securing said blister strips of the two members and of bonding together the two members at the said inner faces thereof, said pressure-sensitive adhesive bearing inner faces being covered, prior to assembly of said package, by release sheets, which comprises removing the release sheets from said supporting and backing members, mounting a plurality of prepackaged blister strips containing a course of medication on the inner face of said supporting member so that the blisters form a matrix in which each row contains the medication for one day arranged in chronological order of the time of administration, folding the backing member so as to bond its inner face to the inner face of the supporting member and the mounted blister strips, and applying directions for administration of the medication to the outer face of the supporting member so that each row is identified with a day of administration and each column is identified with a time of administration.

4,362,001

APPARATUS AND METHOD FOR WRAPPING AND SEALING CYLINDRICAL PACKAGES WITH A STRETCH FILM MATERIAL

C. C. Cockerham, Jr., 4620-A Mercury Dr., and John P. Nelson, 5306 W. Friendly Ave., both of Greensboro, N.C. 27410

Continuation-in-part of Ser. No. 18,746, Mar. 8, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 206,823
Int. Cl.³ B65B *11/04*
U.S. Cl. 53—441 **15 Claims**



1. A method of wrapping the periphery and sealing the ends of cylindrical packages with stretch film comprising the steps of:

(a) supporting the cylindrical package with the longitudinal axis horizontally oriented;

(b) rotating said package by applying a driving force against the side surface thereof;

(c) applying the free end of a sheet of stretch film material delivered from a supply means of such material to the side surface of said package as said package is turning;

(d) as rotation of said package continues, moving said supply means of film material back and forth in a horizontal path parallel to the axis of rotation of said package from a first position in which said film overlaps one end of said package a distance greater than the radius of said package and a second position in which said film overlaps the other end of said package a distance greater than the radius of said package, while applying tension to said film to stretch it as it is wrapped on the package, and automatically applying varied tension to said film such that a prescribed tension is applied at the ends of the path to turn said film toward said longitudinal axis of the article to thereby cover the ends of the article, and automatically applying a different tension during the wrapping of the package in the intermediate portion of the path.

4,362,002

METHOD AND APPARATUS FOR CLOSING A THIN-WALLED CONTAINER BODY

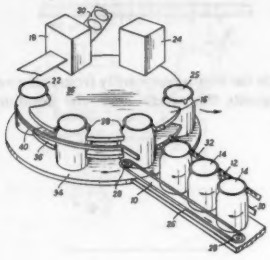
William G. Rowland, Faringdon; Arthur E. W. Morgan, South Oxhey, and Kenneth R. Clark, Standlake, Near Witney, all of England, assignors to Metal Box Limited, Reading, England

Filed Jul. 1, 1980, Ser. No. 165,141

Claims priority, application United Kingdom, Jul. 5, 1979, 7923397

Int. Cl.³ B67B 5/02; B65B 7/28

U.S. Cl. 53—478 5 Claims



1. In a method of applying, over an open end of a thin-walled, hollow container body, having a terminal curled rim about said open end, a diaphragm having an adhesive coating on its underside, the steps of: (a) gripping a planar web of material in a region surrounding a web portion to be cut therefrom to form said diaphragm, (b) whilst said web is so gripped, applying a forming tool to stretch said web portion to form it into a dished configuration comprising a central panel portion, a peripheral flange surrounding said central panel portion, and an upturned portion surrounding said central panel portion and joining the latter to the peripheral flange, whereby aid upturned portion is unwrinkled, (c) after said step of stretching the web portion, further applying said forming tool so as to cut said web portion from said web and place it upon the open end of the container body so as to constitute said diaphragm, with said upturned portion with the open end of the container body and said peripheral flange and upturned portion in contact with said rim, steps (a) to (c) being performed in a single movement of said forming tool (d) transferring said container body with said diaphragm thereon to a position in alignment with a presser tool having a resiliently-deformable pad, and (e) applying said presser tool axially against the diaphragm with said pad in direct contact therewith, and exerting predetermined, substantially even pressure upon said flange and upturned portion whereby to cause them to adhere to, and conform with the underlying contours of said rim.

4,362,003

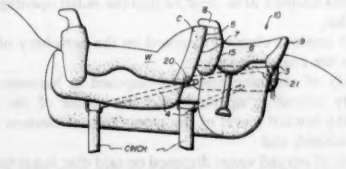
CANTLE SADDLE

Michael A. Robinson, Glenburn Star Rte., Fall River Mills, Calif. 96028

Filed Jun. 20, 1980, Ser. No. 161,323

Int. Cl.³ B68C 1/02

U.S. Cl. 54—44 17 Claims



1. A cantle equestrian saddle attached solely to rear of a main saddle in which the main saddle is cinched with a girth to the body of a horse comprising in combination:

means on a front face of said cantle saddle to conform to a rear contour cantle area of the main saddle,

and means for attaching said cantle saddle exclusively to the main saddle and operatively connected only to the main saddle.

4,362,004

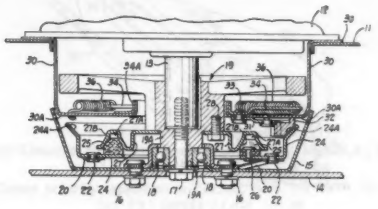
BRAKE AND CLUTCH MECHANISM

Robert W. Rush, Jr., Elyria, and Paul R. Fortlage, Medina, both of Ohio, assignors to MTD Products Inc., Cleveland, Ohio

Filed Nov. 24, 1980, Ser. No. 209,378

Int. Cl.³ A01D 69/08; B60K 41/24

U.S. Cl. 56—11.3 8 Claims



1. In a brake and clutch mechanism for a rotary type lawn mower having a motor mounted on the mower housing, a motor-driven shaft extending from the housing, and a cutting blade mounted on the free end of the shaft and adapted to be rotated by the shaft, the improvement comprising in combination, a rotatable carrying member concentrically mounted about said shaft adjacent the free end of the shaft and adapted to be secured to the blade to rotate with the blade, said rotatable member being unsecured to said shaft to be free to rotate independently of said shaft, a rotor member mounted to the rotatable carrying member to rotate therewith, a resilient member interconnecting said rotatable carrying member and said rotor member and biased to urge the said rotor away from said rotatable carrying member parallel to the axis of said shaft, a first friction element carried by the rotor member and movable therewith toward and away from said rotatable carrying member, a clutch cone member concentrically mounted about said shaft to rotate with said shaft, said clutch cone member having engaging surfaces aligned with said first friction element to clutchingly engage the friction element upon the said resilient member urging the said rotor member away from said rotatable carrying member, said rotor member having a braking surface movable with the rotor member about the axis of said shaft, a second friction element disposed to engage said braking surface of the rotor member, an arm member carried by the mower holding said second friction element, an actuating member for moving the arm member to shift the second friction element carried by the arm member into and out of braking engagement with the said braking surface to brake and unbrake the rotation of said rotor, said second friction element and said braking surface being disposed to face each other so as to impart to the rotor member a component of force which moves the rotor member toward the rotatable carrying member against the resilient urging of the resilient member upon the second friction element being moved into braking engagement with said braking surface to simultaneously terminate the clutching engagement of the rotor member and first friction element, in the engaged condition of the second friction element, the spacing between the said braking surface and the corresponding surface of the second friction element that is engageable by the said braking surface being different from the spacing between the clutch cone member and the corresponding surface of the first friction element that is engageable by the clutch cone member to assure a difference between the occur-

rence of the engagement of the second friction element with said braking surface and the occurrence of the engagement of the first friction element and the said clutch cone member.

4,362,005

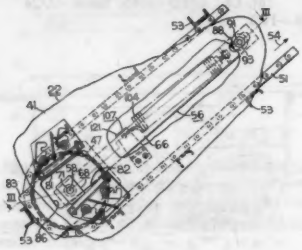
TENSIONING MECHANISM FOR FEEDER CONVEYOR POSITIONED WITHIN FEEDER HOUSING

Roger D. Hanaway, Blue Springs, Mo.; Larry R. James, Olathe, Kans., and Garry W. Busboom, Independence, Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 16, 1981, Ser. No. 283,974

Int. Cl.³ A01D *41/06*; B65G *23/44*; A01D *57/20*

U.S. Cl. 56—14.6 **5 Claims**



1. A harvester having an elongated endless belt conveyor disposed between a pair of vertical side walls of a housing characterized by

an idler drum carrying one end of said conveyor,

a shaft rotatably carrying said drum on a first horizontal axis transverse to said side walls,

a pair of arms within said housing adjacent laterally inner sides of said side walls and extending toward the opposite end of said conveyor, said arms having first corresponding ends connected to laterally opposite end portions of said shaft within said housing,

a pair of pivot connections between second corresponding ends of said arms and said side walls permitting vertical swinging movement of said arms about a second transverse horizontal pivot axis, said pivot connections including cooperating pivot parts on said arms and side walls permitting relative movement between said arms and side walls in the longitudinal direction of said conveyor, and

a pair of tension springs within said housing having first corresponding ends connected to said arms and second corresponding ends connected to said side walls, said springs acting in tension to bias said arms in the longitudinal direction toward said idler drum to operatively tension said conveyor.

4,362,006

HORIZONTALLY ROTATING BLADE-TYPE CONDITIONING DEVICE FOR SWATHERS

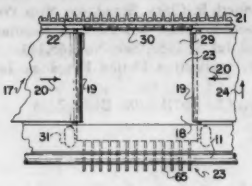
Warren Denzin, R.R. #1, Regina, Saskatchewan, Canada

Filed Jun. 9, 1981, Ser. No. 271,939

Int. Cl.³ A01D *43/00*, *57/20*

U.S. Cl. 56—192 **30 Claims**

1. In a swather which includes a frame, a transverse cutter bar assembly for cutting a swath, including a cutter bar support member, a conveyor system, and a swath discharge area at one end of the conveyor system; the improvecomprising a stubble conditioning assembly below said swath discharge area for conditioning the tops of the stubble over which the swath is to be deposited, said stubble conditioning assembly including a substantially rectangular frame pivotally supported by the front side thereof to the swather frame and depending rearwardly and downwardly through the swath discharge area, gauge means on said rectangular frame for supporting the rear side thereof a predetermined distance from the ground, stubble conditioning means mounted in said rectangular frame upon the underside thereof, operatively connectable to a source of power, to operate same, means overlying said rectangular



frame to guide the swath rearwardly from said swath discharge area and deposits the swath upon the conditioned stubble therebehind.

4,362,007

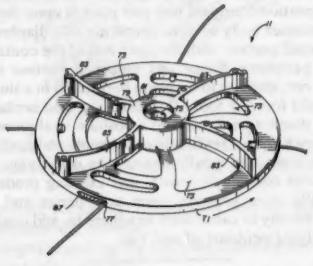
CUTTING HEAD ASSEMBLY FOR A ROTARY MOTOR

Merrill V. Kennedy, 6560 N. Harbor City Blvd., Melbourne, Fla. 32935, and Howard E. Richards, 1347 S. Patrick Dr., Satellite Beach, Fla. 32937

Filed Jun. 24, 1981, Ser. No. 276,893

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—295 **4 Claims**



1. A rotary mower cutting head assembly comprising:

a disc having a smooth closed periphery, a plurality of longitudinally extending openings, and a plurality of radially extending openings;

a plurality of monofilament elements having an elongated portion and a wider head portion, said monofilament elements adapted to be inserted into the radial openings on said disc;

a smooth contour channel disposed on the periphery of the disc at the radial openings;

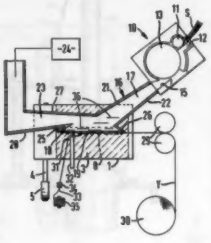
a plurality of retaining members disposed in between the radially extending openings and the center of the disc whereby inward travel of the monofilament element will be restricted; and

a plurality of curved vanes disposed on said disc in a substantially radial position, whereby the vanes create an upward flow of air through the longitudinally extending openings.

4,362,008
METHOD AND APPARATUS FOR FORMING COMPOSITE YARN

Alan Parker, 7 Darvel Close, Breightmet, Bolton, and Peter J. Dickinson, 30 Narcissus Ave., Helmshore, Rossendale, both of England

Filed Dec. 19, 1980, Ser. No. 218,313
Claims priority, application United Kingdom, Dec. 22, 1979, 7944318
Int. Cl.³ D01H *1/12*; D02G *3/38*; D01H *1/135*
U.S. Cl. 57—5 **10 Claims**

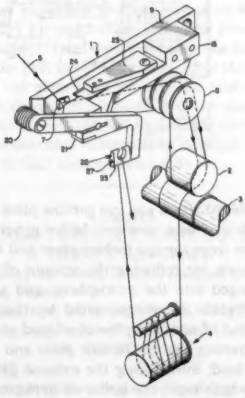


1. In a method of forming a yarn including a component of staple fibres and a component formed by a continuous strand, comprising feeding discrete fibres from the staple fibre component to form a staple fibre strand with one end open, twisting the strand adjacent the open end so that along a portion of its length the strand is in the process of twisting to form a yarn, withdrawing the twisted yarn, and combining the continuous strand with the staple fibre strand to form the yarn, the improvement wherein the continuous strand is introduced to the staple strand at a position intermediate the ends of the portion and the fibres are fed such that some fibres become joined with the strand on the downstream side of the position and some on the upstream side thereof.

4,362,009
YARN ACTUATED STOP MOTION DEVICE

Charles M. Rice, Candler, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Aug. 29, 1980, Ser. No. 182,826
Int. Cl.³ D01H *13/14*, *13/15*
U.S. Cl. 57—86 **12 Claims**

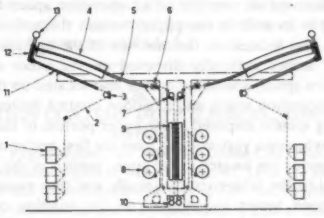


1. A yarn stop-motion device for use with a yarn-processing apparatus, which comprises: yarn break-detector means for detecting a yarn break in the yarn processing apparatus; a cutting means for cutting the yarn being supplied to the yarn processing apparatus, and yarn guide means for guiding the yarn along a substantially linear path through said stop-motion device during normal operation of said yarn-processing apparatus, the yarn break-detector means, the cutting means and the yarn guide being positioned close to each other on one side of said yarn-processing apparatus and said yarn guide means releasing the yarn into said cutting means upon detection of a yarn break by said yarn break-detector means.

4,362,010
FALSE TWIST MACHINE

Henri Crouzet, Renaison, France, assignor to ASA S.A., France

Filed Sep. 5, 1980, Ser. No. 184,278
Claims priority, application France, Nov. 16, 1979, 79 28861
Int. Cl.³ D01H *13/04*, *13/28*
U.S. Cl. 57—279 **3 Claims**



1. A false twisting machine including a number of working positions, each position presenting, in operational sequence:
one supply for the yarn to be processed;
a first delivery device, eventually associated with a yarn drawing attachment;
a heating device comprising a closed heater;
a cooling zone for the heated yarn;
a false twist spindle;
a second delivery device;
a take-up;
the machine having a central frame on either side of which are symetrically arranged the working positions,
each working position further having a guide tube for the yarn arranged between the first delivery device and the heater entry;
and each working position having a connecting element connecting the guide tube to the heater entry;
each connecting element having a supply pipe for connection to a blowing source for delivering a fluid current to the inside of the heater to flow in the same direction as yarn during use to remove fumes from the heater, each supply pipe having a cavity of greater dimension than the fluid flow passage of the supply pipe, and each supply pipe having obturating means comprising a ball which is positioned in the cavity and is supported on a calibrated spring for allowing the delivery of fluid current during normal operation but for obturating the fluid flow passage of the supply pipe when the heater exit is aspirated for a yarn launching operation.

4,362,011

FALSE-TWISTING EQUIPMENT

Syuichi Kikuchi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

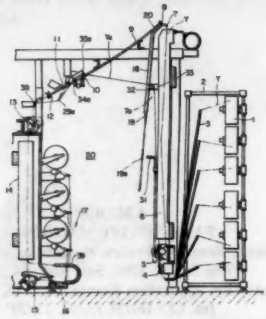
PCT No. PCT/JP79/00322, § 371 Date Aug. 25, 1980, § 102(e) Date Aug. 22, 1980, PCT Pub. No. WO80/01289, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 22, 1979, Ser. No. 206,552

Claims priority, application Japan, Dec. 25, 1978, 53-165009

Int. Cl.³ D02G *1/02*

U.S. Cl. 57—291 3 Claims



1. False-twisting equipment comprising a first heater vertically disposed on one side of an operation space including a guide pin located in the upper portion thereof, a yarn feed bobbin also located on the one side of the operation space, a second heater vertically disposed on the other side of the operation space, a winding device also located on the one side of the operation space, and a balloon control device and false-twisting spindle disposed in the upper portion of the operation space, wherein a yarn coming from the first heater may be bent by the guide pin located in the upper portion of the first heater and fed to the false-twisting spindle and then passed through the second heater and wound on the winding device, said balloon control device and false-twisting spindle being arranged in a straight line whereby yarn passing through said balloon control device and false-twisting spindle travels substantially in a straight line in the upper portion of the operation space and said first heater being located close to the floor whereby the yarn passing through the upper portion of the operation space has an angle as large as possible with respect to the first heater.

4,362,012

ANTI-BALLOON DEVICES OF SPINNING FRAMES

Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France

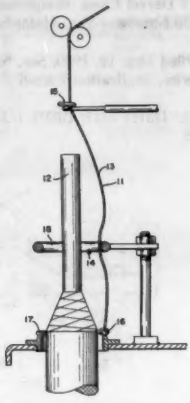
Filed Aug. 20, 1980, Ser. No. 179,740

Claims priority, application France, Aug. 24, 1979, 79 21330

Int. Cl.³ D01H *13/04*

U.S. Cl. 57—355 2 Claims

1. An anti-balloon device for a spinning or twisting machine comprising a ring adapted to be positioned around the bobbin spindle of the machine for controlling ballooning of textile strands, said ring having a roughened surface created by a fine sand-blasting operation, said roughened surface being covered with a first metallic coating for reducing the rough excrescences without removal thereof of the roughened surface produced by the operation of said fine sand-blasting and said



surface further being covered with a second metallic coating having enhanced heat conductivity properties.

4,362,013

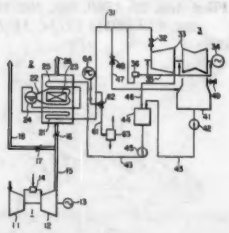
METHOD FOR OPERATING A COMBINED PLANT

Tetsuzo Kuribayashi, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,491

Int. Cl.³ F02C *6/18*

U.S. Cl. 60—39.02 8 Claims

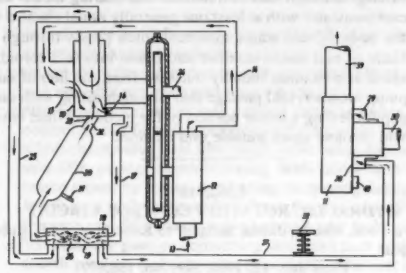


1. In a combined steam and gas turbine plant consisting of a gas turbine plant, a heat recovery boiler generating steam by the exhaust gas from the gas turbine plant and incorporating a denitrating means for reducing the amount of nitrogen oxide (NOx) discharged into the atmosphere, and a steam turbine plant driven by the steam generated by the heat recovery boiler; a method of operating the combined plant comprising the steps of: starting the gas turbine plant and running it at a low constant load; introducing the exhaust gas from the gas turbine to the heat recovery boiler to generate steam during the low load operation of the gas turbine plant; sealing the glands of the steam turbine by supplying the steam from the heat recovery boiler to the glands; and starting the steam turbine.

4,362,014
ROTARY MACHINES AND POWER SYSTEMS USING SAID MACHINES

Ronald W. Driver, 9 Rydal Pl., Clitheroe, Lancashire, and Edwin J. Hardaker, 36 Devonshire St., Skipton, North Yorkshire, both of England

Filed Dec. 26, 1979, Ser. No. 107,341
Claims priority, application United Kingdom, Jan. 2, 1979, 7900040; Jan. 2, 1979, 7900076
Int. Cl.³ F02C 3/04
U.S. Cl. 60—39.43 4 Claims



1. A power system comprising a rotary device (10) (conveniently called a "gas generator") of the kind having a rotor eccentrically disposed in a casing to establish an eccentric annulus divided into separate compartments each of which defines a confined void whose volume changes cyclically as the rotor rotates relative to the casing, means (12) for feeding compressed ambient cold air to said device (10) to compress the air further over a part of the eccentric annulus of the device, means (20) including a flame combustor for adding heat to said further compressed air, means allowing the heated further compressed air to expand partially in another part of the eccentric annulus of the rotary device (10) to generate power, means (24) auxiliary to the system utilizing said power, at least one further rotary device (11) (conveniently called a "drive engine") of the kind having a rotor eccentrically disposed in a casing to establish an eccentric annulus divided into separate compartments each of which defines a confined void whose volume changes cyclically as the rotor rotates relative to the casing, means (27) for conducting the partially expanded heated further compressed air to said further rotary device (11) to allow further expansion and generation of further power, valve means (29) for controlling the mass flow through the conducting means (27) and thereby change the back pressure at the rotary device (10) to change the speed of the rotary device (10), in which the rotary device (10) and said further rotary device (11) are devoid of mechanical drive coupling to each other; and control means (61, 69) to maintain the flame temperature of said combustor substantially constant at all loaded speeds of said further rotary device (11).

4,362,015
DOUBLE JET GAS TURBINE ENGINE EQUIPPED WITH A THRUST REVERSER

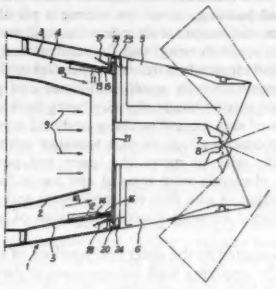
Etienne Fage, Jouy en Josas, France, assignor to Astech, Meudon La Foret, France

Filed Apr. 28, 1980, Ser. No. 144,675
Claims priority, application France, May 11, 1979, 79 11999
Int. Cl.³ F02K 3/06
U.S. Cl. 60—226 A 11 Claims

1. In a by-pass gas turbine engine comprising a central generator including a central jet exhaust pipe having an exit end adapted to emit a first jet of relatively hot gas;

an annular by-pass conduit surrounding said central jet exhaust pipe, said by-pass conduit having an exit end adapted to emit a second annular jet of relatively cold gas enveloping said jet of relatively hot gas,

a thrust reverser located downstream of the exit ends of said jet exhaust pipe and said by-pass conduit, said thrust reverser comprising doors movable between a folded position in which said doors are clear of said jets and an unfolded position in which said doors are disposed transversely in the path of said jets,



the improvement comprising:

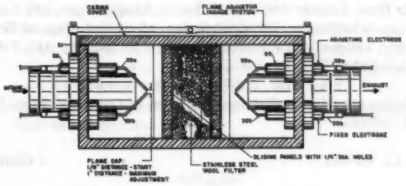
restricting means for selectively obstructing a portion of the discharge outlet area of said exit end of said by-pass conduit through which said second jet is emitted,

said restricting means and said reverser being coupled in operation such that said by-pass conduit is obstructed when said doors are unfolded.

4,362,016
POLLUTION CONTROL DEVICE FOR AUTOMOBILE EXHAUST

Stephen C. Papadopulos, 114 38th St., Union City, N.J. 07087

Continuation-in-part of Ser. No. 84,741, Oct. 15, 1979, abandoned, and a continuation-in-part of Ser. No. 969,661, Dec. 15, 1978, abandoned, and a continuation-in-part of Ser. No. 881,015, Feb. 24, 1978, abandoned. This application Mar. 9, 1981, Ser. No. 241,528
Int. Cl.³ F01N 3/26, 3/28, 3/38
U.S. Cl. 60—297 18 Claims



1. An emission control device for reducing pollution of the atmosphere by automobile engine exhaust gases, comprising in combination,

a housing having walls defining a chamber, an inlet for exhaust gases into said chamber, and an outlet for exhaust gases spaced from said inlet to cause exhaust gases to flow through said chamber from said inlet to said outlet, said housing having an opening and a wall portion comprising a cover for said opening movable between open and closed positions,

a plurality of pairs of electrode units mounted in said housing and spaced from one another, each of said pairs comprising a first casing mounted in a wall of said housing, a first tubular insulator extending through said casing, a first electrode wire extending through said first insulator and

having an inner end portion exposed in said chamber and an outer end portion outside said housing, means providing a pressure-tight seal between said first electrode wire, said first insulator and said first casing, a second casing mounted in the same wall of said housing beside and near said first casing, a second tubular insulator extending through said second casing, a second electrode wire extending through said second insulator and having an inner end portion inside said chamber near the inner end portion of said first electrode wire and an outer end portion outside said housing, means providing a pressure-tight seal between said second electrode wire, said second insulator and said second casing, said first and second tubular insulators and electrode wires being parallel with one another and spaced laterally apart, said inner end portion of at least said second electrode wire being bent at an angle to the axis of said second insulator and said second insulator being rotatable about its axis together with said second electrode wire to move the inner end portion of said second electrode wire toward and away from the inner end portion of said first electrode wire and thereby vary the distance between inner tip portions of said electrode wires,

means connected to the outer end portions of said electrode wires for supplying high voltage electric current continuously to said electrode wires of each pair of electrode units to produce a continuous electric discharge between said inner tip portions of the electrode wires of each pair while the engine of said automobile is running,

an arm fixed on an outer end portion of said second tubular insulator of each pair of electrode units and extending radially of said second insulator, linkage interconnecting said arms of all of said pairs of electrode units and control means connected with said linkage and operable to rotate all of said second insulators and said second electrode wires to a first position to bring inner tips of said first and second electrode wires of each pair close together to provide a gap of about one eighth inch to initiate discharge between them when the engine is started and thereafter move said tip portions further apart to increase the length of the electric discharge path between them to provide a gap of about one inch and maintain them continuously in said further spaced condition to provide a continuous flame for consuming combustibles in the exhaust gases.

4,362,017

HYDRAULIC TORQUE CONVERTER

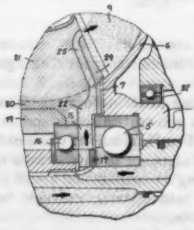
Franz Boss, Kressbronn; Gerold Bieber, Langenargen, and Karl-heinz Schachmann, Friedrichshafen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 128,081

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909968

Int. Cl.³ F16H *41/30*

U.S. Cl. 60—337 **3 Claims**



1. In a hydraulic torque converter wherein a pump member, a turbine member and a stator member have coaxial hubs independently rotatable inside a housing and have blade-supporting peripheral walls defining a toroidal space filled with transmission fluid, said stator member and said pump member being separated from each other by a gap, the hub of said turbine member being mounted on an output shaft journaled in a trunnion of said housing, said trunnion forming an inlet for fresh fluid and an outlet for spent fluid, the hubs of said pump member and of said stator member being respectively supported on said trunnion by first and second bearing means axially spaced from each other,

the improvement wherein said inlet passes inwardly of said first bearing means and terminates at a passage which extends between said first and second bearing means and communicates with at least one generally radial channel in the body of said stator member which passes through a blade of said stator member and opens into said toroidal space at a location radially outward from the hub of said pump member, said passage also communicating with said gap for letting a minor portion of the incoming fluid enter said toroidal space outside said channel.

4,362,018

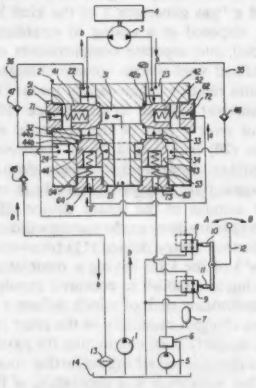
HYDRAULIC ROTATION CONTROL CIRCUIT

Satoru Torii, Akashi, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Filed Jun. 12, 1980, Ser. No. 158,877

Int. Cl.³ F15B *13/042*

U.S. Cl. 60—468 **1 Claim**



1. A hydraulic rotation control circuit operating below a maximum pressure for rotating a rotary body under a driving pressure, comprising

a control valve assembly including a first, second, third and fourth port and first, second, third and fourth passages formed in said assembly wherein the cross sectional areas of said first and second passages are equal;

a first pump connected to said first port communicating with said first passage and producing a maximum pressure;

a first check valve communicating the second port with the second passage and allowing fluid flow from the first passage to the second port and passage;

a second check valve communicating the third port with the third passage and allowing fluid flow from the first passage to the third port and passage;

a third check valve allowing fluid flow from the third passage to the fourth passage;

a fourth check valve communicating the fourth port with the fourth passage and allowing fluid flow from the second passage to the fourth port and passage wherein said fourth check valve is substantially the same structurally and dimensionally as said second check valve such that

said driving pressure may be maintained at a substantially constant predetermined level;

a first variable reducing valve communicating with said second and fourth check valves and including means for producing a variable pressure less than said maximum pressure by controlling blocking force of said second and fourth check valves against said first and second passages, respectively;

a second variable reducing valve communicating with said first and third check valves and including means for producing a variable pressure less than said maximum pressure by controlling a blocking force of said first and third check valves against said first and third passages, respectively; and

a second pump for delivering a pressurized fluid to said first and second variable reducing valves;

a rotary actuator connected to said second and third ports and operable to rotate said rotary body;

a fifth passage formed in said control valve assembly, said control circuit further comprising a fluid storage tank and a fifth check valve, said fifth check valve being disposed in said fifth passage communicating with said fourth port, biased closed by means, and having an opening facing said fourth port such that said fluid flows from said fourth port through said fifth check valve and into said tank; and

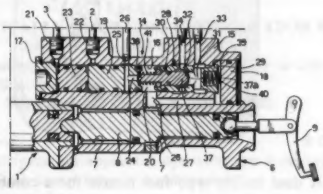
a first auxiliary passage connecting said third port with said fourth passage, a check valve provided in said first auxiliary passage and having an opening facing said fourth passage, a second auxiliary passage means connecting said fourth port with said second port, and a check valve provided in said second auxiliary passage and having an opening facing said fourth port.

4,362,019

MOTOR VEHICLE HYDRAULIC SYSTEM

Antonino Bertone, Saluggia, and Paolo Vannini, Cambiano, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Nov. 26, 1980, Ser. No. 211,534
Claims priority, application Italy, Dec. 11, 1979, 69373 A/79
Int. Cl.³ B60T *13/00*
U.S. Cl. 60—547 A **2 Claims**



1. An hydraulic system for a motor vehicle provided with servo assisted controls for the brakes and the steering, the said system comprising:

a reservoir,

a volumetric pump the input of which is connected to the said reservoir,

a master cylinder having a main piston operable by means of the brake pedal to generate pressure in the motor vehicle's wheel braking circuits,

an hydraulic actuator for the control of the steering,

a first distributor device associated with the said hydraulic actuator and controlled by the steering wheel of the motor vehicle to transmit the pressure generated by the volumetric pump to the said actuator,

a second distributor device associated with the brake master cylinder and controlled by the pressure existing in the said braking circuit to transmit the pressure generated by the volumetric pump to the said main piston of the master cylinder, whereby to assist the force applied to the brake pedal when an increase in pressure occurs in the said braking circuit following

operation of the brake pedal, the said second distributor device comprising:

a body forming part of the body of the master cylinder and provided internally with a cyindrical cavity,

a control piston, slidably and sealingly mounted within the cylindrical cavity and defining within this cavity a first chamber communicating with the wheel braking circuit of the motor vehicle, and a second chambe which communicates with the said reservoir by means of a passage formed in the control piston and with an input aperture formed in the body of the second distributor device, the said input aperture being connected with the output of the volumetric pump by means of a delivery duct, and with a cavity of the master cylinder in which there is slidably mounted the main piston of the master cylinder, and

a valve shutter member cooperating with the mouth of the passage formed in the control piston to interrupt communication between the second chamber and the reservoir,

said second distributor device further comprising:

a distributor piston slidably and sealingly mounted in the said second chamber and having a tubular body closed at its end opposite the control piston whereby to divide the second chamber into two parts which both communicate with the interior of the master cylinder

a control member slidably and sealingly mounted within the tubular body of the distributor piston, whereby to define within the said tubular body a third chamber which communicates by means of radial passages formed in the tubular body both with the said input aperture and with an output aperture formed in the body of the second distributor device, the said output aperture being connected with the said reservoir by means of a return duct in which the said first distributor device is inserted; the end of the said control member which faces the interior of the tubular body being formed as a valve shutter and being cooperable with an annular valve seat formed in the internal surface of the tubular body to interrupt communication between the said input and output apertures; the said opposite end of the control member being disposed outside the tubular body and constituting the said shutter member; the tubular body of the distributor piston having its closed end formed as a valve shutter displaceable from a cooperating annular valve seat formed in the wall of the said cylindrical cavity to place the said third chamber in communication with the part of the second chamber which lies between the distributor piston and an end wall of the cylindrical cavity,

first resilient means interposed between the distributor piston and the end wall of the said cylindrical cavity in order to urge that end of the distributor piston which is formed as a valve shutter against its valve seat, and

second resilient means interposed between the control piston and the distributor piston.

4,362,020

HERMETIC TURBINE GENERATOR

John S. Meacher, Ballston Lake, and David E. Ruscitto, Ballston Spa, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Feb. 11, 1981, Ser. No. 233,436
Int. Cl.³ F01K *11/04*
U.S. Cl. 60—657 **17 Claims**

1. A power generating system for recovering energy from a low temperature heat source that includes

a heat exchanger for transferring energy from a low temperature source to a low boiling point refrigerant to vaporize said refrigerant,

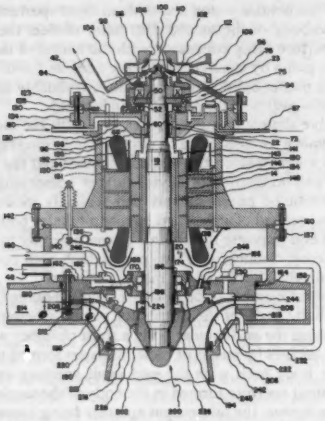
a sealed housing for supporting a rotor shaft vertically therein,

a feed pump secured to the upper end of the shaft for pumping vapor from the heat exchanger to the inlet of a turbine

secured to the lower end of the shaft to drive an electrical generator operatively connected to the shaft intermediate said feed pump and said turbine whereby the turbine supports at least a portion of the rotor when it reaches operational speed,

a condenser connected to the housing directly beneath the turbine for reducing refrigerant vapors discharged from the turbine to a liquid,

an upper bearing means connected to said shaft between said vapor pump and said generator,



a lower bearing means connected to said shaft between said turbine and said generator,

a boost pump for moving refrigerant from the condenser to the feed pump and into both said bearing means whereby said refrigerant is permitted to gravity flow through said bearing means to cool and lubricate said bearing means, and

flow directing means for gravity feeding liquid refrigerant leaving the upper bearing means over the surfaces of the electrical generator for cooling said generator.

4,362,021

GAS TURBINE ENGINE FUEL INJECTORS

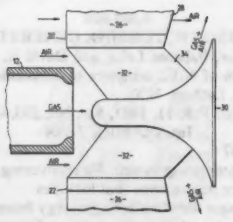
Jeffrey D. Willis, Coventry, England, assignor to Rolls-Royce Limited, London, England

Filed Jul. 16, 1980, Ser. No. 169,430

Claims priority, application United Kingdom, Aug. 1, 1979, 7926836

Int. Cl.³ F23R *3/28*; B05B *7/10*

U.S. Cl. 60—737 **4 Claims**



1. A gas fuel injector for a gas turbine engine having a casing and a flame tube therein, said gas fuel injector being for use with gaseous fuels having a range of calorific values and comprising:

a fuel nozzle positioned upstream of said flame tube for discharging gaseous fuel in a downstream direction toward said flame tube, said fuel nozzle extending through an opening in and being attached to said casing of said engine; and

fuel and air inlet means downstream of said fuel nozzle, said fuel and air inlet means being fixedly attached to the upstream end of said flame tube and separately mounted with respect to said fuel nozzle, said fuel and air inlet means including an outer substantially annular passage containing air swirling means and arranged to receive a flow of compressed air and discharge the same downstream into said flame tube as a flow of swirling air in a direction generally parallel to the longitudinal axis of the flame tube, and an inner substantially annular passage for receiving gaseous fuel from the fuel nozzle and a flow of compressed air, said inner annular passage decreasing in cross-sectional area in a downstream direction and terminating in a downstream outlet aligned to direct the flow of gaseous fuel and compressed air discharged therefrom outwardly at an angle to the longitudinal axis of the flame tube into the flow of swirling air discharging from the outer annular passage.

4,362,022

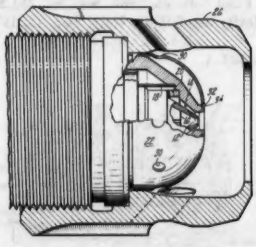
ANTI-COKE FUEL NOZZLE

Joseph E. Faucher, East Hartford; Richard R. Wright, Willimantic; Francis C. Pane, Jr., South Windsor, and David Kwoka, Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 3, 1980, Ser. No. 126,256

Int. Cl.³ F02C *7/22*

U.S. Cl. 60—742 **4 Claims**



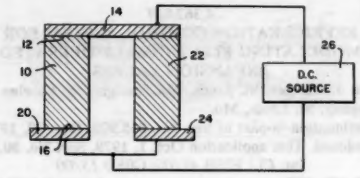
1. A dual orifice type fuel nozzle for a combustor of gas turbine engine having a compressor, said fuel nozzle having a generally conically shaped casing with a primary fuel passage centrally disposed therein, secondary fuel passage formed therein concentrically disposed relative to the primary fuel passage, both primary and secondary passages exiting fuel into said combustor through a substantially mutual transverse plane, means for imparting a swirl component to compressor discharge air surrounding the fuel exiting from said primary and secondary passages, means for feeding fuel to said primary fuel passage so that it is normally continuously operative throughout the engine operating envelope and means for feeding fuel to said secondary fuel passage so that it is normally operative solely during the high thrust regimes and inoperative during the low thrust regimes of said engine operating envelope, means for pressurizing the secondary passage when said primary passage is solely operative with said compressor discharge air whereby said secondary passage maintains a positive pressure for preventing fuel from said primary passage from migrating therein and coking the walls of said secondary passage.

4,362,023

THERMOELECTRIC REFRIGERATOR HAVING IMPROVED TEMPERATURE STABILIZATION MEANS

Charles M. Falco, Woodridge, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1981, Ser. No. 287,965
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 **8 Claims**



1. A thermoelectric refrigerator having improved temperature stabilization means comprising:

first and second elements connected electrically in series and thermally in parallel, forming a cold junction and a hot junction;

means for passing an electrical current through said first and said second elements;

means for a thermally connecting said cold junction to an object to be refrigerated, and means for connecting said hot junction to a heat sink;

one of said first and said second elements having a first order change at a predetermined critical temperature above which said one of said first and said second elements functions as a thermoelectric refrigerator element and below which said one of said first and said second elements discontinuously ceases to function as a semiconductor thermoelectric refrigerator element whereby said thermoelectric refrigerator is thermally stabilized about said predetermined critical temperature.

4,362,024

PNEUMATICALLY OPERATED REFRIGERATOR WITH SELF-REGULATING VALVE

Otto C. Winkler, Balzers, Liechtenstein, assignor to Oerlikon-Buhrle U.S.A. Inc., New York, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,190
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **8 Claims**

1. In a refrigeration apparatus operating on a compressed expansible fluid, comprising in combination:

cylinder means;

reciprocating means movable within said cylinder means between a first limit and a second limit and comprising a displacer mechanically joined to a piston, said displacer and said cylinder means together defining first and second refrigeration chambers of complementary variable volumes, and said piston and said cylinder means defining a driving chamber of variable volume, said displacer, piston, and cylinder means being so disposed that as said reciprocating means is moved from said first limit to said second limit said first chamber's and said driving chamber's volumes decrease from their maximum values to their minimum values while simultaneously said second chamber's volume increases from its minimum value to its maximum value;

a fluid path communicating between said first and second chambers and including a regenerator means;

a first fluid conductive manifold communicating between said first chamber and a plurality of ports of a first spool valve bore, one of said plurality of ports being a pilot port;

a first pair of fluid conductive conduits communicating between said driving chamber and individual ones of a second plurality of ports of said first spool valve bore;

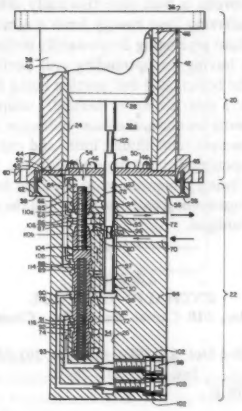
a second pair of fluid conductive conduits communicating between individual ones of a third plurality of ports of said first spool valve bore and individual ports of a second spool valve bore;

a second fluid conductive manifold adapted to communicate with a high pressure source of said compressed fluid and further communicating with individual ports of said first and said second spool valve bores; and

a third fluid conductive manifold adapted to communicate with means for exhausting said compressed fluid and further communicating with individual ports of said first and second spool valve bores;

the improvement comprising in combination:

a spring-loaded pilot spool valve configured and dimensioned to fit in said first spool valve bore and to be movable from a first position to a second position in response to fluid pressure in excess of a predetermined fluid pressure and to otherwise be urged toward said first position, said pilot spool valve being provided with (1) a first spool



section configured and dimensioned to connect said first manifold alternatively with (a) a first one and (b) a second one of said second pair of fluid conductive ports, (2) a second and a third spool section configured and dimensioned to cooperatively act to connect said second manifold alternatively to (a) said first manifold and (b) one of said first pair of conduits, and (3) a fourth spool section configured and dimensioned to (a) connect and (b) disconnect the other one of said first pair of conduits to said third manifold; each respectively according to the location of said pilot spool valve in said (a) second and (b) first position; and

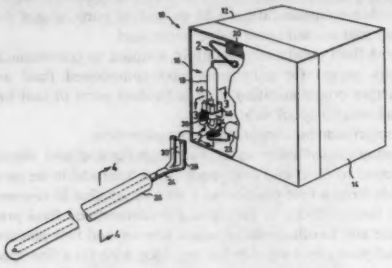
a second spool valve mechanically joined to said reciprocating means and configured and dimensioned to movably fit within said second spool valve bore, said second spool valve being provided with a pair of spool sections configured and dimensioned to (1) connect said third manifold with said second one of said second pair of conduits only when said reciprocating means is substantially at said second limit and (2) connect said second manifold with said first one of said second pair of conduits only when said reciprocating means is substantially at said first limit.

4,362,025

SOLAR POWERED REFRIGERATION APPARATUS

Franklyn H. Theakston, Guelph, Canada, assignor to The Guelph Manufacturing Group Ltd., Guelph, Canada

Filed Feb. 26, 1981, Ser. No. 238,595
Claims priority, application Canada, Sep. 16, 1980, 360351
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—148 **11 Claims**



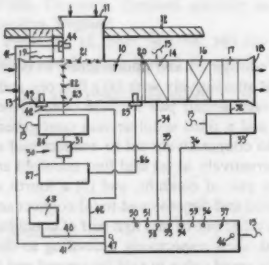
1. Solar powered refrigeration apparatus comprising: an absorption refrigeration system having a boiler for input of heat energy thereto; a heat pipe thermally connected to the boiler for transferring heat energy from a remote location to the boiler, the heat pipe being downwardly inclined away from the boiler and having an upstanding end portion in thermal contact with the boiler, said end portion being disposed parallel to the boiler; a solar collector thermally coupled to the heat pipe at said remote location, the solar collector being a double walled glass vacuum tube having inner and outer walls and a central axial opening for accommodating the heat pipe, the solar collector being dimensioned to heat the heat pipe above 270° F. at said upstanding end portion when the solar collector is exposed to sunlight.

4,362,026

ENTHALPY CONTROL

Lloyd W. Miller, 610 Carver Beach Rd., Chanhassen, Minn. 55317

Filed Oct. 27, 1980, Ser. No. 201,326
Int. Cl.³ F25B *29/00*
U.S. Cl. 62—176 E **3 Claims**



1. Apparatus for conditioning the air in a space comprising, in combination:

a plenum;

means admitting to the plenum return air from within the space;

means admitting to the plenum air from outside the space;

a cooler;

a fan for drawing air from said plenum over said cooler and discharging it into said space;

means for varying the ratio between the quantities of outside air and return air admitted to said plenum in accordance with the temperature of the air in said plenum;

means responsive to the enthalpy of the air outside said space;

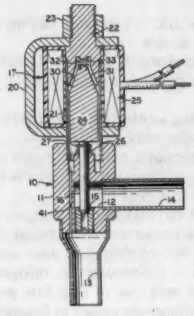
and means disabling said cooler and maximizing said ratio when said enthalpy has less than a predetermined value.

4,362,027

REFRIGERATION CONTROL SYSTEM FOR MODULATING ELECTRICALLY-OPERATED EXPANSION VALVES

William J. Barbier, St. Louis, Mo., assignor to Sporlan Valve Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 865,903, Dec. 30, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,398
Int. Cl.³ F25B *41/00*; G05D *15/00*
U.S. Cl. 62—197 **2 Claims**



1. In a refrigeration system including a compressor, a condensor, and an evaporator operatively connected, the system comprising:

(a) a modulating, electrically operated expansion valve connected to the inlet of the evaporator,

(b) first and second temperature-responsive electrical sensors, the first sensor being positioned to respond to the temperature of liquid refrigerant expanded to suction pressure, and the second sensor being positioned to respond to suction line sensible temperature,

(c) an electrical amplifier circuit connecting the sensors to the valve for modulation of the opening and closing of the valve in response to the differences in the temperatures sensed by the sensors,

(d) refrigerant-bleeding means in the system feeding refrigerant at a low flow rate when the first and second sensors sense the same temperature as during start-up of the system, the bleed flow causing the sensors to sense different temperatures to cause modulation of the valve to control superheat, the first sensor being positioned to respond to the saturation temperature of the suction pressure of the bleed flow,

(e) the refrigerant-bleeding means being a small orifice in a bypass line between the high and low pressure sides of the system of sufficient size to provide a low flow rate to initiate modulation of the valve,

(f) the bypass line being connected to the low pressure side of the system downstream of the second sensor, and

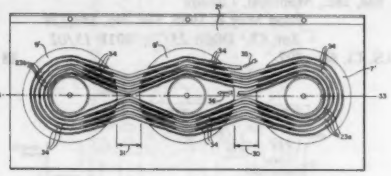
(g) the electrical amplifier circuit including a detector for determining whether the suction saturation temperature exceeds a maximum set point, and actuating the expansion valve to close and limit the suction saturation temperature on start-up and limit compressor motor start-up load.

4,362,028

MULTI-BOWL BEVERAGE DISPENSERS

Alfred Armstrong, Norwood, Mass., assignor to Crathco, Inc., Canton, Mass.

Filed Jan. 14, 1981, Ser. No. 224,941
Int. Cl.³ B67D 5/62
U.S. Cl. 62—390 7 Claims



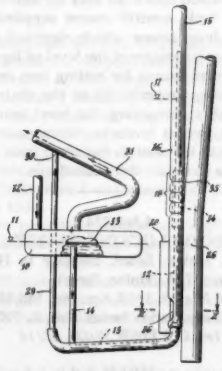
1. A beverage dispenser, comprising a stand housing a refrigeration system, a plurality of cooling members mounted on said stand with first surfaces oriented to transfer heat away from beverage in bowls on said stand, said cooling members all having second surfaces opposite said first surfaces in heat-transferring engagements with one evaporator in said refrigeration system, said evaporator having a single refrigerant passageway therethrough in the general form of a single multi-turn elongated loop with coplanar concentric turns, the sucessive passageway turns in said loop each coursing substantially arcuately about at least part of each of said cooling members, in succession, and then similarly coursing back across said cooling members in the opposite sequence to complete each turn in said loop, whereby to promote uniformity in cooling by said members.

4,362,029

ABSORPTION REFRIGERATOR BOILER CONSTRUCTION

Peter E. Blomberg, Stockholm; Karl G. Boren, Skärholmen, and Axel H. Östergren, Stockholm, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 6, 1981, Ser. No. 251,347
Claims priority, application Sweden, Apr. 15, 1980, 8002803
Int. Cl.³ F25B 33/00
U.S. Cl. 62—497 6 Claims



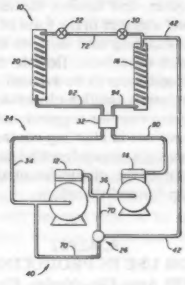
1. In an absorption refrigerating apparatus having a single pipe boiler construction, and that operates with inert gas in which absorption solution rich in refrigerant is lifted in a central pump pipe in which vapor is expelled and the weak solution formed therein flows downwardly in an outer pipe, at least one heat source being arranged in heat-conductive contact with the outside of said outer pipe and heat from the heat source being conducted through the weak solution in the outer pipe to the pump pipe and its contents, the improvement comprising: a first means for supplying heat directly by conduction to said outer pipe, and a deformed section of said outer pipe which engages said pump pipe and forms a second direct heat-conductive connection arranged between the outer pipe and said pump pipe.

4,362,030

REFRIGERATION CIRCUIT

Roger J. Voorhis, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 2, 1981, Ser. No. 298,817
Int. Cl.³ F25B 1/10
U.S. Cl. 62—510 10 Claims



1. A refrigeration circuit comprising:

a low stage compressor, a high stage compressor, a condenser, an expansion device, and an evaporator;

refrigerant flow means connecting the high and low stage compressors, the condenser, the expansion device, and the evaporator to form a closed, vapor compression refrigeration loop, and including

a low pressure line for conducting refrigerant vapor to the low stage compressor,

an interstage line for conducting refrigerant vapor discharged from the low stage compressor to the high stage compressor,

by-pass means connecting the low pressure line with the high stage compressor for conducting refrigerant vapor therebetween to by-pass the low stage compressor, and

a quench line connected to the by-pass means for conducting liquid refrigerant thereto; and

a check-quench valve located at the intersection of the by-pass means and the quench line and having

a quench position blocking the by-pass means and opening the quench line to direct refrigerant from the low pressure line serially through the low stage compressor, through the interstage line, and into the high stage compressor, and to inject refrigerant from the quench line into the refrigerant vapor discharged from the low stage compressor, and

a by-pass position opening the by-pass means and closing the quench line to direct refrigerant from the low pressure line through the by-pass means and into the high stage compressor to by-pass the low stage compressor.

4,362,031

MULTIPARTITE JEWELRY ITEM USEFUL AS A FINGER RING

Hermann Obermüller, Schenkenzell, Fed. Rep. of Germany, assignor to Gebr. Niessing, Ureden, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,722

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930500

Int. Cl.³ A44C 9/00

U.S. Cl. 63—15 7 Claims

1. A multipartite item of jewelry particularly useful as a finger ring comprising: eight hollow tubular sections each formed as a circular arc subtending an angle of 90° arranged together end-to-end to form an overall endless closed loop, the ends of each of said sections being movable relative to the ends of each adjacent section to enable said sections to be turned relative to each other; and flexible means resiliently holding said curved sections together in the form of said overall endless closed loop while enabling said sections to be turned end-to-end relative to each other; said flexible means enabling said overall endless closed loop to be twisted upon itself to form said jewelry item into a smaller closed loop formed of two generally overlapping circular segments while maintaining the ends of adjacent sections in abutting contact; said overall endless closed loop having a circumferential dimension which is at least twice as large as the circumferential dimension of said smaller closed loop formed therefrom.

4,362,032

APPARATUS FOR USE IN PRODUCING KNIT FABRICS

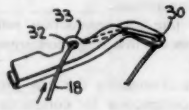
Walter Palange, 989 Aqua Cir., Naples, Fla. 33940

Continuation-in-part of Ser. No. 23,455, Mar. 23, 1979, Pat. No. 4,246,768, which is a division of Ser. No. 886,776, Mar. 15, 1978, Pat. No. 4,193,273. This application Nov. 13, 1979, Ser. No. 93,882

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.³ D04B 3/00

U.S. Cl. 66—4 9 Claims



1. Apparatus for producing knit fabrics comprising a base member having an outer edge, a series of substantially equally spaced knitting supports arranged along said outer edge of said base member, each knitting support having an outer upright portion with a free upper surface and a flange portion extending rearwardly of said upright portion, said flange portion having an upper surface below the upper surface of said upright portion, said upright portion having at least one lateral surface defining a longitudinal groove extending from the upper surface of said upright portion to below the level of said upper surface of said flange portion and at least one needle for use in forming stitches on said knitting supports, said needle having a planar arched forward end portion including a crest and terminating in a tip, a first yarn-threading eye in said forward end portion adjacent said tip and a second yarn-threading eye in said forward end portion spaced rearwardly from said first yarn-threading eye.

4,362,033

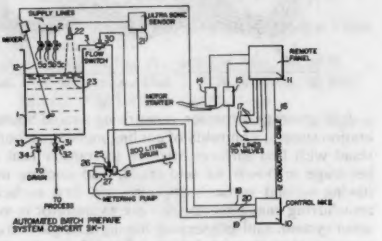
AUTOMATIC MIXING AND CLOTH BLEACHING CONTROL

Charles W. Young, Dorval, Canada, assignor to Dominion Textile, Inc., Montreal, Canada

Filed May 8, 1980, Ser. No. 149,129

Int. Cl.³ D06B 23/26; B01F 15/02

U.S. Cl. 68—207 28 Claims



7. Apparatus for controlling the flow of at least one chemical to a cloth saturator bath through which cloth to be processed is continuously passed comprising means for measuring the speed of the cloth and for thereby deriving signals representative of the speed of the cloth, circuit means for selectively entering a value corresponding to the density of the cloth and for thereby weighting these signals according to the density of the cloth whereby signals corresponding to the weight of cloth per minute are obtained, means responsive to the last mentioned signals to pump into the saturator bath a quantity of said at least one chemical whereby the quantity of said at least one chemical pumped to the saturator bath corresponds to the measured weight of cloth per minute.

13. Apparatus for providing a mix of two or more liquids in predetermined volumetric proportions comprising a mixing tank, supply lines leading to the mixing tank from respective sources of the two or more liquids, valve means on each supply line for controlling the flow of the respective liquid, a single level sensor positioned above the tank for monitoring the level of liquid in the tank, control means supplied by electrical signals from the level sensor which electrical signals have a variable parameter indicative of the level of liquid in the tank, means in the control means for setting two or more desired levels corresponding respectively to the desired volumetric proportions and for comparing the level monitored by the level sensor with the set levels to obtain control signals and means responsive to the control signals to open and close each valve in sequence to obtain the desired mix.

4,362,034

DOOR LOCKING DEVICE

Abraham Amgar, Holon, Israel, assignor to Hosem Reliable Protection System Ltd., Holon, Israel

Filed May 9, 1980, Ser. No. 148,488

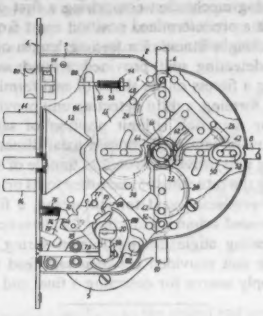
Claims priority, application Israel, Jun. 8, 1979, 57523

Int. Cl.³ E05B 59/00, 63/14

U.S. Cl. 70—108 8 Claims

1. A locking device mountable within a door and including at least one locking bar driven by actuator means to a locking position projecting from the respective side of the door into the door frame, or to an unlocking position withdrawn from the door frame, characterized in that the inner end of each locking bar includes a cam follower, and in that said actuator means includes a rotatable drive gear and a gear-cam segment for each locking bar driven by said drive gear and coupled to its respective locking bar for driving same; said segment in-

cluding gear teeth formed on a first portion of its outer circumference meshing with the teeth of the drive gear, and a cam



surface formed on a second portion of its outer circumference engageable by the cam follower carried by its respective locking bar.

4,362,035

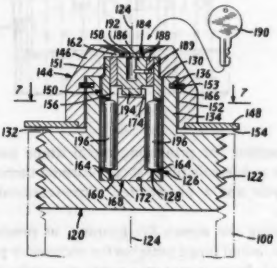
LOCKABLE CLOSURE

Steven Vitale, 269 Greencroft Ave., Staten Island, N.Y. 10308

Filed Aug. 25, 1980, Ser. No. 180,801

Int. Cl.³ B65D *39/08, 55/14;* **E05B** *63/00;* **F16L** *35/00*

U.S. Cl. 70—165 **8 Claims**



1. A lockable closure for a threaded conduit comprising:

(a) a threaded element adapted sealingly to engage the conduit, the threads of such element defining an axis;

(b) a shield rotatably attached to said threaded element on said axis, said shield at least partially covering said threaded element, a surface of said shield confronting a surface of said threaded element so that during engagement of said threaded element with said conduit, said shield impedes direct engagement of said threaded element by a tool;

(c) means for permitting rotational coupling between said threaded element and a tool upon actuation by key means; and

(d) said confronting surfaces defining therebetween means including a gap for impeding linkage of said confronting surfaces by introductions of an adhesive material.

4,362,036

FUEL TANK LOCKING APPARATUS

Donald J. Shanklin, Fullerton, Calif., assignor to Superior Industries International, Inc., Van Nuys, Calif.

Filed Dec. 26, 1979, Ser. No. 106,396

Int. Cl.³ B65D *51/18, 55/14*

U.S. Cl. 70—167 **9 Claims**

1. A fuel tank lock for use with a conventional filler neck having a baffle plate formed with a round constricted passage that is eccentric to said filler neck and normally closed by a biased-shut valve member carried by said baffle plate that is forced open when engaged by an unleaded fuel nozzle of smaller transverse cross-section than said constricted passage, with the upper end of said filler neck being provided with a conventional fuel tank cap, said lock comprising:

a body provided with a key-operated locking mechanism in its upper portion and a shank that extends through said constricted passage;

collar means on said body larger than said constricted passage that rest upon the upper surface of said baffle plate to support said body thereupon;

latch means operatively associated with said body shank movable between a locked position wherein part of said latch means extend transversely of the underside of said baffle plate outwardly of said constricted passage and an unlocked position disposed inwardly of said passage to permit withdrawal of said shank from said passage, with said latch means being actuated by said locking mechanism; and

a transverse extension formed on said collar means that abuts said filler neck above said constricted passage and transversely outwardly thereof to prevent rotation of said body shank within said passage relative to said baffle plate as said key-operated locking mechanism is actuated.

4,362,037

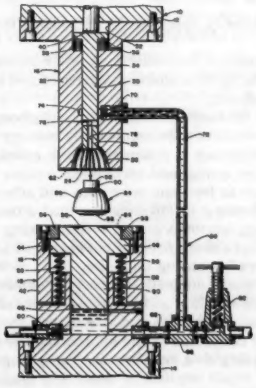
HOLLOW ARTICLE INTERNAL PRESSURE FORMING APPARATUS AND METHOD

Therman C. Whitfield, Corona, Calif., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 24, 1980, Ser. No. 200,156

Int. Cl.³ B26D *26/02*

U.S. Cl. 72—58 **25 Claims**



1. In a forming apparatus for bulging hollow bulbous metal knobshells outwardly relatively small distances against enclos-

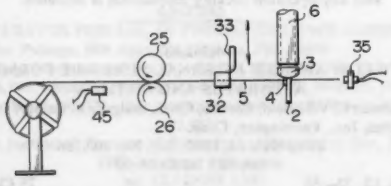
ing die cavity surfaces by application of only internal high fluid pressures directed solely through a preformed reduced size knobshell neck access opening; the apparatus including: first and second dies constructed and arranged with said dies movable longitudinally together to a closed position and thereafter in said closed position by continued longitudinal urging placing said dies in progressive longitudinal pressure exerting conditions, said dies in said closed position forming a die cavity having surfaces enclosing said knobshell with a reduced size knobshell neck access opening exposed to said first die, said die cavity surfaces outwardly of said knobshell being exposed at all times venting to the atmosphere; die moving means for moving said dies to and from said closed position and progressively urging said dies into said die longitudinal pressure exerting conditions only while in said closed position; fluid pressure means operably connected free of reaction until said dies are in closed position but directly fluid flow reactive to said dies being urged into said die progressive longitudinal pressure exerting conditions and operably connected to said first die directing fluid flow into said knobshell through said knobshell neck access opening, said fluid pressure means during said dies being urged into said progressive longitudinal pressure exerting conditions at all times exerting a greater reverse longitudinal force on said dies tending to retain said dies in closed position than knobshell forming force created internally outwardly from within said knobshell against said die cavity surfaces tending to urge said dies apart.

4,362,038

WIRE FORMING APPARATUS FOR TORSION SPRINGS

Sota Katahira, Yokohama; Hideaki Tsukioka, Kawasaki; Yutaka Sakuma, Yokosuka, and Hideo Higuchi, Shiga, all of Japan, assignors to Keihin Hatsujyo Company Limited, Kanagawa, Japan

Filed Apr. 29, 1980, Ser. No. 144,812
Claims priority, application Japan, Sep. 19, 1979, 54-119252
Int. Cl.³ B21F *3/04*
U.S. Cl. 72—130 **5 Claims**



1. A wire forming apparatus for producing torsion springs, comprising:

a first servomotor for rotating an arbor having a diameter corresponding to a central diameter of said torsion spring to be produced;

feed rollers for feeding a wire onto said arbor;

a second servomotor for reciprocally moving said arbor in an axial direction in accordance with a desired pitch for said torsion spring, said second servomotor rotating said feed rollers to feed said wire onto said arbor;

a terminal forming mechanism provided around said arbor for forming terminals of said torsion spring;

a cutting mechanism provided between said arbor and said feed rollers for cutting said wire;

a microcomputer adapted to generate control signals for controlling said first and second servomotors, said terminal forming mechanism and said cutting mechanism;

an input unit connected to said microcomputer for supplying torsion spring data required for generating said control signals;

a detecting mechanism connected to said microcomputer for supplying second signals detected during the production of said torsion spring to said microcomputer so that said microcomputer can generate additional control signals thus achieving feedback control; and

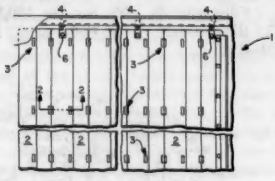
said detecting mechanism comprising a first detecting unit placed at a predetermined position apart from said arbor for detecting a fitness of a feeding length of said wire, a second detecting unit provided around said arbor for detecting a fitness of the shape of said terminal after said terminal forming, a third detecting unit provided near said arbor for detecting a limit position of said reciprocal movement of said arbor in said axial direction, a fourth detecting unit provided around a spindle of said arbor for detecting the returning of said arbor to its original position prior to producing said torsion spring, a fifth detecting unit provided around said arbor for detecting a variance of a winding angle of said torsion spring, and a sixth detecting unit provided between said feed rollers and a wire supply source for detecting a final end of said wire.

4,362,039

APPARATUS AND METHOD FOR PRODUCING FOLDABLE METAL DRAPE PANELS

Andrew J. Toti, 311 W. River Rd., Modesto, Calif. 95351

Filed Mar. 31, 1980, Ser. No. 135,785
Int. Cl.³ B21D *13/00, 31/00*
U.S. Cl. 72—186 **29 Claims**



1. In a machine for producing metal drape panels having integral male and female hinge means formed thereon at preselected intervals and a preselected cross-sectional profile, in combination:

rotary cutting die means for forming, at precisely spaced intervals, initial hinge patterns for successive pairs of male and female hinge means on a continuous strip of thin metal passing therethrough;

equalizing die means positioned at a die station following said rotary cutting die means for controllably stretching said strip as it passes therethrough to adjust the overall incremental distance between pairs of initial hinge patterns formed thereon; and

driving means for pulling said continuous strip through said rotary cutting die means and said equalizing die means while maintaining substantial tension in said strip as it passes through said die means.

4,362,040

METHOD AND APPARATUS FOR THE CONTROLLED COOLING OF HOT ROLLED STEEL RODS

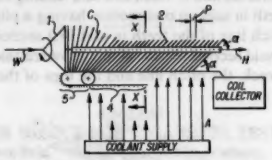
Yoshihiro Yamaguchi; Kouro Takatsuka, both of Kobe; Shohei Murakami, Akashi; Rikuo Ogawa, Kobe; Yoshiro Yamada, Akashi; Tadamasa Yokoyama, Kobe, and Shoji Akita, Nishinomiya, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Mar. 26, 1980, Ser. No. 134,300
Claims priority, application Japan, Mar. 29, 1979, 54-38049
Int. Cl.³ B21B *43/10*
U.S. Cl. 72—201 **7 Claims**

1. A method for controlled cooling of a hot rolled steel rod, which comprises:

forming a hot rolled steel rod into a coil,

transporting the coiled rod in a generally horizontal direction while supporting its loops at a loop plane angle of 30° to 60° relative to the direction of transportation and with a pitch of at least $2d/\sin\alpha$ in the direction of transportation, where d is a diameter of the coiled rod and α is the loop plane angle, and



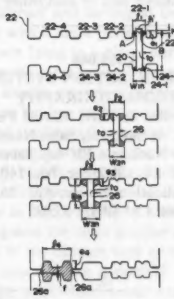
applying a cooling medium to the coiled rod upwardly from below the coiled rod during transportation to cool the coiled rod uniformly at such a cooling rate as to achieve a phase transformation and to obtain a structure consisting essentially of fine pearlite.

4,362,041

METHOD OF FORMING BEAM BLANK

Teruyuki Nakanishi; Toshiyuki Akune; Takashi Kusaba, and Takashi Ehiro, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Sep. 3, 1980, Ser. No. 183,829
Claims priority, application Japan, Sep. 11, 1979, 54-117026
Int. Cl.³ B21B *1/08*
U.S. Cl. 72—221 **3 Claims**



1. A method of forming a beam blank having a web and flanges by means of horizontal working rolls provided with calibers for use to produce in subsequent rolling mills a final product of shaped steel, said method comprising the ordered steps of:

reduction-rolling a plate-shaped slab in the widthwise direction at first box calibers each formed at a center thereof with a belly, said first box calibers having a width greater than the thickness of the slab so that side spreadings are generated at opposite ends in the widthwise direction of the slab to make a dog-bone shaped blank, said belly having a tip so sharpened as to form a centering groove for positioning on the opposite end portions of the slab in the widthwise direction;

reduction rolling the dog-bone shaped blank in the widthwise direction at second box calibers each formed at a center thereof with a belly meeting with said groove, said second box calibers having a width greater than a maximum width of the dog-bone blank to enter a first pass at the second box calibers so that the side spreadings are further generated;

further reduction rolling the dog-bone shaped blank in the widthwise direction at final box calibers each having a flat bottom or a bottom formed at the center thereof with a belly low in height, said final box calibers having a width greater than the maximum width of the dog-bone shaped blank to enter a first pass at the final box calibers so that the side spreadings are further progressed; and

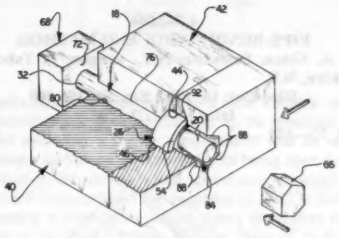
rolling the dog-bone shaped blank at beam blank calibers in a direction to depress the opposite sides thereof for forming the web portion and the flange portions into their shapes thereby to provide a beam blank being of a predetermined shape in cross section.

4,362,042

METHOD OF FORMING A FASTENER

Glendon L. Crow, Jr., Gardendale, Ala., assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Oct. 1, 1980, Ser. No. 192,650
Int. Cl.³ B21D *31/00, 53/00;* B21K *1/44*
U.S. Cl. 72—353 **17 Claims**



1. A method of forming a fastener having a head end portion and a shank portion, said method comprising the steps of providing a longitudinally extending workpiece having a uniform transverse cross sectional area throughout its length, heating an end portion of the workpiece so that the workpiece has a relatively hot end portion and a relatively cold end portion, said step of heating the workpiece including the step of increasing the transverse cross sectional area of the relatively hot end portion of the workpiece, providing a ring having a central opening with an area which is greater than the transverse cross sectional area of the cold end portion of the workpiece and less than the transverse cross sectional area of the hot end portion of the workpiece, effecting axial movement between the ring and workpiece with the ring circumscribing the relatively cold end portion of the workpiece, interrupting axial movement between the ring and workpiece by impacting engagement of the ring and the relatively hot end portion of the workpiece, applying force against the relatively hot end portion of the workpiece while holding the ring and workpiece against axial movement relative to each other to form the head end portion of the fastener, and thereafter effecting axial movement between the ring and the workpiece to disengage the ring from the shank portion of the fastener.

4,362,043

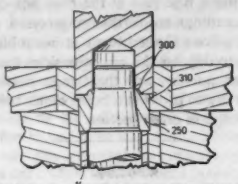
PIPE UNIONS

Thomas A. Hanson, 357-7 Devonshire Ave., Woodstock, Ontario, Canada

Continuation-in-part of Ser. No. 614,127, Sep. 17, 1975, abandoned. This application Oct. 8, 1980, Ser. No. 194,957
Int. Cl.³ B21K *1/16*
U.S. Cl. 72—354 **2 Claims**

1. A multi-stage process for cold working a metal tubular blank to deform said blank in multiple stages to form a male component of a pipe union, said process comprising placing a tubular blank in a die cavity which supports the exterior surface of said blank, a tapered plug being positioned within said

blank where the base of the blank contacts the tapered plug, supporting the base of the blank, forcing a punch against the blank upper end, said punch having an annular angled face which deforms the blank wall towards and against said tapered



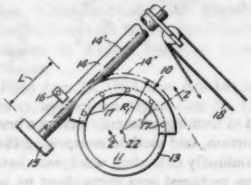
plug to form a shortened blank of thicker wall, removing said punch and in a second stage forcing a punch having a recessed face portion of a configuration which forms a flange and spigot for co-operating with a female component of a pipe union.

4,362,044

PIPE-BENDING DIE AND METHOD

Arthur A. Green, Scarsdale, N.Y., assignor to Tubeco, Inc., Brooklyn, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,300
Int. Cl.³ B21D *7/00*
U.S. Cl. 72—388 **9 Claims**



1. Forming-die structure for use in the arcuate bending of a length of pipe of given range of outer diameters, such bending being in a radial plane about the bending axis, said structure comprising two axially spaced parallel base-plate members and means rigidly retaining their spaced relation on opposite sides of the radial plane of the bend, the outer-edge profile of said members being arcuate to the same radius about the bend axis, each of said edges being conical about the bend axis, the respective slopes of the generally conical edges being convergent in the axial direction of said radial plane, the axial extent of each of said conical edges and the axial spacing of said members being such in relation to the given pipe diameter as to enable concurrent local tangential pipe-section contact with the generally conical edges of both members, said members being free of such pipe-section contact on both axial sides of each such contact, whereby in the course of making a bend against the conical surfaces of said members, the material of the pipe engages the die structure only at opposite axial offsets from the radial plane of the bend, and whereby the range of pipe diameters upon which said forming die may be used is substantially determined by the conical extent of said edges.

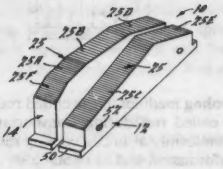
4,362,045

TOOTH FORMING TOOLS

George Mickas, Southfield, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 10, 1980, Ser. No. 195,843
Int. Cl.³ B21H *5/00*
U.S. Cl. 72—469 **20 Claims**

1. A set of tools for pressure forming teeth on the periphery of a cylindrical workpiece, said set being comprised of a pair of elongate racks each having a leading end and a trailing end and each being provided with a working face having a plurality of teeth thereon each having a pitch line, a first section of said teeth on one of said racks being disposed between said leading end and said trailing end of said one rack, each of said teeth in said first section having a configuration conjugate to the configuration of the teeth to be formed on the workpiece, said one rack having second and third sections of teeth disposed between said first section of teeth and said leading end of said one rack, the teeth in said second section having a pitch line parallel to the pitch line of the teeth in said first section, the tops of the teeth in said second section sloping toward said leading end of said one rack, the pitch line and the tops of the teeth in said



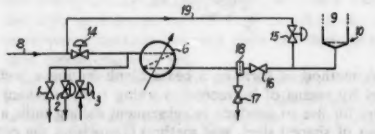
third section sloping toward said leading end of said one rack, said one rack also having a fourth section of teeth disposed between said first section of teeth and said trailing end of said one rack, the pitch line and the tops of the teeth in said fourth section sloping toward said trailing end of said one rack, the other of said racks having fifth and sixth sections of teeth, the teeth in said fifth section having a pitch line parallel to the pitch line of the teeth in said first section, the tops of the teeth in said fifth section sloping toward the leading end of said other rack, the pitch line and the tops of the teeth in said sixth section sloping toward the trailing end of said other rack.

4,362,046

LIQUID SAMPLE INJECTION SYSTEM FOR GAS CHROMATOGRAPHY

Michel Perrut, St Nicolas de Port; Marcel Pointet, Serezin du Rhone, and Henri T. de Santerre, Saint Nazaire, all of France, assignors to Societe Nationale Elf Aquitaine, Paris, France

Filed Apr. 14, 1980, Ser. No. 140,114
Claims priority, application France, Apr. 26, 1979, 79 10649
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **3 Claims**



1. A system for gas chromatography by feeding a vaporized liquid to be processed to a chromatographic column via a vaporizer swept by a vector gas, said system comprising:

first valve means for coupling a conduit for said vector gas to an inlet of said vaporizer;

means for enabling said vaporizer to substantially instantaneously vaporize said liquid;

sample injection means including a second valve means for intermittently coupling a conduit for said liquid to an iniet of said vaporizer while the vector gas is passing through said vaporizer so that the concentration of said vaporized liquid in said vector gas varies with time with an essentially rectangular waveform;

an outlet conduit for coupling the vaporized liquid and vector gas mixture from said vaporizer to an inlet of said chromatographic column;

a bypass conduit for providing communication between said vector gas conduit and said outlet conduit; and

bypass valve means in said bypass conduit for selectively permitting said vector gas to flow directly to said chromatographic column when said vaporizer is inactive.

4,362,047

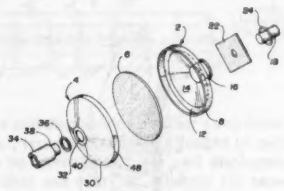
FILTER DEVICE FOR CIGARETTE TESTING

Charles E. vonReis, Ann Arbor; Attila Vadnay, Saline, and Robert E. Corbett, Ann Arbor, all of Mich., assignors to Gelman Sciences Inc., Ann Arbor, Mich.

Filed Feb. 23, 1981, Ser. No. 237,239

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—28 **6 Claims**



1. A disposable filter device comprising:

(a) a main body having a generally cylindrical portion open at one end thereof and having at the other end thereof a closure wall which has a peripheral portion with an inner annular surface lying in a plane normal to the axis of the body and a portion extending from said peripheral portion to a central, axially-extending nipple, said generally cylindrical portion having an inner wall with a radially outwardly flared portion adjacent said open end and with a portion between said outwardly flared portion and said closure wall which is tapered radially inwardly in a direction toward said open end;

(b) a filter disc in said main body with a peripheral portion positioned against the inner annular surface of said peripheral portion of the closure wall of said main body; and

(c) a closure cone having a conical wall portion with an opening at its small-diametered end for connection to a sub-ambient pressure source and having an annular flange which extends generally axially from the large-diametered end of said conical wall portion of said closure cone and which terminates in an annular surface positioned against the peripheral portion of said filter disc, said annular flange having an outer surface in contact with the radially inwardly tapered portion of the inner wall of the generally cylindrical portion of said main body;

(d) said closure member being formed of a substantially non-hygroscopic organic polymer which is relatively hard and said main body being formed of a substantially non-hygroscopic organic polymer which is relatively soft and resilient whereby the inherent resiliency of the generally cylindrical portion of said main body, in cooperation with the outwardly flared and radially inwardly tapered inner wall portions enables the annular flange of the closure member to be snap fitted into the generally cylindrical portion of the main body and removably retains the annular flange of the closure member within the generally cylindrical portion of the main body in sealed relationship therewith and in pressed contact with the peripheral portion of said filter disc.

4,362,048

APPARATUS FOR USE IN THE MEASUREMENT OF A VARIABLE

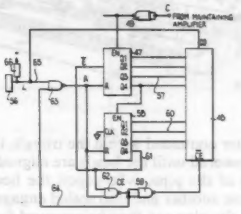
Joram Agar, Grand Cayman, British West Indies, and Gerald Anderson, New Alresford, England, assignors to Redland Automation Limited, England

Continuation of Ser. No. 67,071, Aug. 15, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,927

Claims priority, application United Kingdom, Jun. 4, 1979, 7919367

Int. Cl.³ G01N *9/00*

U.S. Cl. 73—32 A **18 Claims**



1. Apparatus for measurement of a fluid variable within a vessel comprising a housing adapted to be mounted in the vessel and including a sealed compartment and an unsealed compartment, said unsealed compartment being open for exposure to fluid in the vessel; a first transducer mounted within said unsealed compartment for exposure to fluid in the vessel for producing a transducer output signal dependent on both the value of the fluid variable and the value of at least one calibration constant of said transducer; a counter mounted within said sealed compartment and adapted to receive clock pulses; a memory mounted within said sealed compartment and programmed with information relating to the value of the at least one calibration constant, said counter responsive to an activating signal for addressing said memory to produce as an encoder output signal a pulse train at the frequency of clock pulses received by said counter, the pulse train containing information related to the at least one calibration constant; and connector means mounted externally on said housing, connected to said first transducer, said counter, and said memory, and adapted for connection to an output transducer, said connector means receiving the transducer output signal and the encoder output signal and, when connected to an output transducer, passing to the output transducer the transducer output signal and the encoder output signal and receiving from the output transducer an activating signal for application to said counter.

4,362,049

METHOD AND APPARATUS FOR LEAK TESTING THE INTERIOR OF PIPE

Mark D. Horton, Apartment #1028 2401 West Belt, North, Houston, Tex. 77043

Filed Oct. 6, 1980, Ser. No. 194,386

Int. Cl.³ G01M *3/28*

U.S. Cl. 73—49.6 **11 Claims**

1. Apparatus for hydrostatically testing pipe comprising a main frame, an upwardly opening water trough supported by said frame, said trough having a length greater than the length of a pipe to be tested;

a vertically movable pipe manipulator superimposed above said trough and movable towards and away from the trough opening;

spaced heads reciprocably carried by said pipe manipulator, means by which said heads releasably engage the opposite ends of a pipe in sealed relationship therewith;

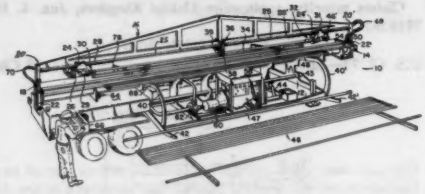
a source of fluid pressure connected to one said head; means by which a pipe can be transferred into said trough and

positioned below the liquid level of any water which may be contained therein so that the pipe is filled with fluid;

said pipe manipulator includes means for engaging and lifting a submerged pipe into a position above said trough;

means for transferring a pipe away from said pipe manipulator;

whereby pipe to be tested is submerged below the fluid level



of any water contained within the trough, the pipe manipulator is lowered until the heads are aligned with the axial centerline of the pipe, whereupon the heads are moved towards one another and into sealed engagement with the pipe ends, the pipe can then be removed from the trough, fluid pressure can then be applied to the interior of the pipe to thereby test the leak characteristics of the pipe, and the heads are then removed from the pipe ends.

4,362,050

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

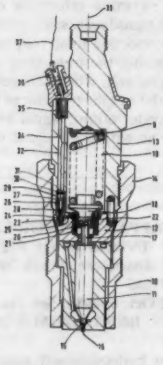
Gerhard Stumpp; Ewald Eblen, both of Stuttgart; Karl Hofmann, Remseck; Odon Kopse; Nestor R. Amaya, both of Stuttgart; Josef Schlagenhauf, Esslingen, and Johannes Locher, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,924

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932480

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **11 Claims**



1. A fuel injection nozzle for internal combustion engines comprising a nozzle body (10), containing a valve needle (11) including a pressure tang (17), said nozzle body being fastened to a nozzle holder (13), a closing spring (19) disposed in said nozzle holder, which reacts on said pressure tang (17) of the valve needle (11) via a pressure element (18); an intermediate plate (12) axially between the nozzle body (10) and the nozzle holder (13), said intermediate plate having a recess (21) for the penetration of said pressure tang (17) of the valve needle (11), said intermediate plate forming a stop for limitation of the opening stroke of the valve needle (11) in concert with an annular shoulder in the transition of the tang (17) to an unweakened part of the valve needle (11) and which acts as a coil core to change the reluctance of a magnetic field formed by the induction coil to create a signal; characterized in that said induction coil (20) is imbedded in the recess (21) of said intermediate plate (12) and the tang (17) of the valve needle (11) extends at least partially through the induction coil (20), and a section (22) of the pressure element (18) extends through the induction coil (20) to form a coil core for said induction coil.

4,362,051

FUEL INJECTION NOZZLE HOLDER FOR INTERNAL COMBUSTION ENGINES

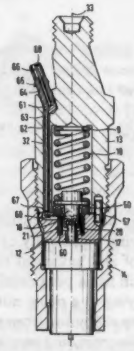
Josef Schlagenhauf, Esslingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,442

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004424

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **10 Claims**



1. A fuel injection nozzle for Diesel internal combustion engines, having an induction coil including a winding attached to a housing and a reciprocable valve needle comprises a coil core, the stroke of said valve needle coil core arranged to vary the reluctance of the magnetic circuit of the induction coil and thereby generate a signal, said induction coil secured in an intermediate disc member which abuts a nozzle holder and a pressure element and said valve needle form said coil core, characterized in that first and second contact springs are embedded in said induction coil, each of said contact springs having end portions, one end portion of which springs forms a substantially tangentially extending contact tongue, and another end portion of which springs protrudes into a recess in said induction coil for connection with said winding.

4,362,052

FLOWMETER

Alastair E. F. Heath, Dunton; David J. Neville, Aylesbury; Barry Cockburn, Gawcott, and Stephen Bussey, Buckingham, all of England, assignors to Leslie Hartridge Limited, Buckingham, England

Filed Apr. 30, 1981, Ser. No. 259,354

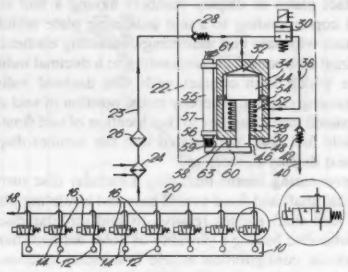
Claims priority, application United Kingdom, May 16, 1980, 8016368

Int. Cl.³ G01F *3/14*

U.S. Cl. 73—119 A **10 Claims**

1. A flowmeter comprising a chamber-defining part and a displaceable member which is moveable in relation to said chamber-defining part between two ends of travel to change the size of the chamber, means defining an inlet fluid-flow path which leads to said chamber and an outlet fluid-flow path of

the flowmeter, flow-control means arranged in said fluid-flow path defining means to control the flow of fluid selectively through the said inlet fluid-flow path to move said displaceable member or from said inlet fluid-flow path to said outlet fluid-flow path without moving said displaceable member, measuring means arranged to measure the distance through which said displaceable member moves, flying start means connected to the measuring means to cause the latter to commence measurement at a time after said flow-control means have been switched to cause fluid to flow through said inlet fluid-flow



path to move said displaceable member away from one of said ends of travel, terminating means arranged to cause the measurement to be terminated before said displaceable member reaches its other end of travel, whereby the measurement is completed during a single stroke of said displaceable member, and return means arranged to return said displaceable member to its starting end of travel before each succeeding measurement by said measuring means, whereby all measurements are made with said displaceable member travelling in the same direction.

4,362,053

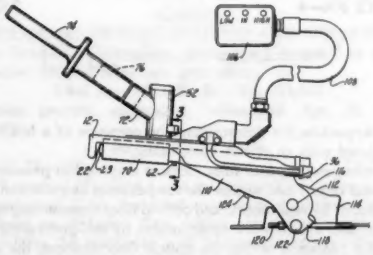
APPARATUS FOR MEASURING PARKING BRAKE ACTIVATING FORCES

Gary L. Barrett, Union Lake, Mich., assignor to GSE, Inc., Farmington Hills, Mich.

Filed Mar. 9, 1981, Ser. No. 241,912

Int. Cl.³ G01L *5/28*

U.S. Cl. 73—121 **21 Claims**



1. A test fixture for measuring the amount of force required to move a lever arm to a predetermined position, said test fixture comprising:

a body adapted to be clamped to the lever arm;

transducer means carried by the body for measuring the amount of force exerted on the body during movement; and

switch means arranged to be actuated when the lever arm has been moved to a predetermined position whereby the output of the transducer means at the time of switch activation provides a measurement of the force required to move the lever arm to the predetermined position.

4,362,054

METHOD AND APPARATUS FOR DETERMINING DIRECTION PARAMETERS OF A CONTINUOUSLY EXPLORED BOREHOLE

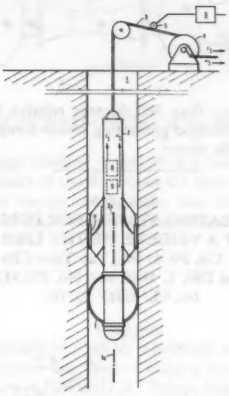
Jean Ringot, Gif sur Yvette, France, assignor to Schlumberger Technology Corp., New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,421

Claims priority, application France, Sep. 27, 1979, 7924029

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—152 **22 Claims**



1. Method for determining at least two direction parameters of a borehole as a function of depth, comprising the steps of:

producing an acceleration signal with three components representing a set of accelerations undergone by a tool travelling through the borehole, said components being detected along three reference axes related to this tool;

producing a reference signal with three components representing a vector of fixed direction different from the vertical, in relation with said three reference axes;

combining the components of said signals, measured at a given depth of the borehole, so as to eliminate the effects of tool movement in the components of one of said signals, constituting a signal to be stabilized, by means of the components of the other signal, constituting a stabilizing signal; and

combining the resulting components with components of said signals in a manner so as to derive parameters related to the position of the tool in the borehole and therefore related to direction parameters of the borehole.

4,362,055

POWER TRANSMISSION PART TESTING APPARATUS

Werner H. Grobler, Stuttgart, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jan. 26, 1981, Ser. No. 228,423

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020391

Int. Cl.³ G01M *13/02*

U.S. Cl. 73—162 **7 Claims**

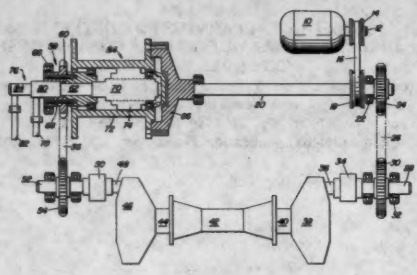
1. An apparatus for testing parts for the transmission and absorption of power, comprising:

a drive motor;

a part to be tested having an input drivingly coupled to the drive motor and having an output; and

torque generating means for applying a torque to the part to be tested, the torque generating means having an input

member drivingly coupled to the output of the part to be tested and having an output member drivingly coupled to the drive motor, the input member being rotatable



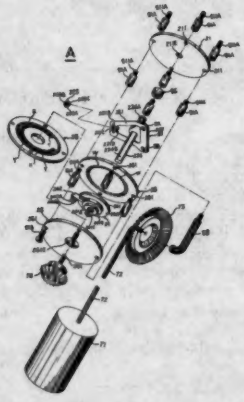
through more than 360 degrees relative to the output member, the torque generating means comprising a rotatable hydraulic motor.

4,362,056

DIGITAL INDICATING SYSTEM FOR FUEL QUANTITY OF A VEHICLE OR THE LIKE

Cheng-Shun Lee, 124, Po Ai Rd., Tao Yuan City, Taiwan

Filed Dec. 1, 1980, Ser. No. 211,912
Int. Cl.[3] G01F *23/10*
U.S. Cl. 73—317 11 Claims



1. A system for indicating the quantity of fuel in a vehicle comprising:

a float located in a fuel tank of a vehicle;

a shaft cooperatively connected to said float so that movement of said float causes rotation of said shaft;

a fixed base surrounding said shaft;

a spring assembly fixed to said shaft for rotation therewith;

a digital readout system which includes a pair of electrical contacting elements mounted on said shaft for rotation therewith, a circular insulating plate surrounding said shaft and fixed to said base plate so that said shaft and said electrical contacting elements rotate relative to said insulating plate, a plurality of unit indicating contact plates fixed on said circular insulating plate in a circular configuration at a first radial location on said insulating plate, a plurality of decimal indicating contact plates fixed on said circular insulating plate in a circular configuration at a second radial location on said insulating plate, each one of said decimal indicating contact plates having an arcuate length corresponding to a plurality of said unit indicating contact plates, said pair of electrical contacting elements including a unit indicating contacting element located at said first radial location and in electrical contact with said unit indicating contact plates and a decimal indicating contacting element located at said second radial location and in electrical contact with said decimal indicating contact plates so that as said shaft and electrical contacting elements rotate relative to said insulating plate, said electrical contacting elements contact different ones of said unit and decimal indicating plates, and a digital display device connected to said unit and decimal indicating contact plates to display numbers having a unit component corresponding to a unit indicating plate which is in contact with said unit indicating contacting element and a decimal component corresponding to a decimal indicating plate which is in contact with said decimal indicating contacting element whereby radial position of said shaft is translated into a number so that location of said float in the vehicle fuel tank is translated into the number displayed by said display device; and

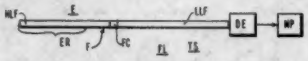
error preventing means including a circular disc surrounding said shaft and fixed to said base and insulating plates so that said shaft rotates relative to said circular disc, said circular disc having a plurality of holes defined therein in a circular configuration at said first radial location, each hole being aligned with and having an arcuate length equal to that of one of said unit indicating contact plates so that each unit indicating contact plate is coincident with a hole in said error preventing means circular disc, a roller element mounted on said shaft for rotation therewith, said roller element being located at said first radial location to contact said holes, and biasing means on said spring assembly forcing said roller toward said holes so that as said shaft rotates said roller moves step-by-step with each step corresponding to a unit indicating contact plate whereby at any static location of said shaft said roller is entrapped in a hole thereby preventing a non-unitary location of said unit indicating contacting element and ensuring step-by-step movement of said digital readout system.

4,362,057

OPTICAL FIBER TEMPERATURE SENSOR

Milton Gottlieb, Churchill, and Gerald B. Brandt, Edgewood, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 10, 1980, Ser. No. 195,911
Int. Cl.[3] G01K *1/00*
U.S. Cl. 374—4 7 Claims



1. Apparatus for determining the presence of a hot region associated with an object, comprising,

an elongated optical fiber element disposed in proximity to said object and within the temperature environment produced by said object, said optical fiber element responding to said temperature environment by self-generating thermal radiation within the optical fiber element, the wavelengths of the spectral composition of the self-generated thermal radiation varying along the length of said optical fiber length as a function of the variations in the temperature of the object along the length of the optical fiber element, the total radiation varying exponentially with temperature such that the spectral composition of the self-generated thermal radiation transmitted to an end of the optical fiber element is determined substantially by the highest temperature region along the optical fiber element, and

a thermal radiation detector means operatively coupled to an

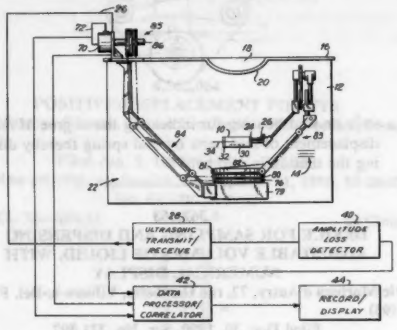
end of said elongated optical fiber element to provide an indication of the hottest region of said object.

4,362,058

ULTRASONIC DIAGNOSTIC APPARATUS

Manlio Abele, Garden City, N.Y., assignor to New York University, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,568
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—599 **19 Claims**



1. An ultrasound diagnostic device for examining a subject comprising

an elongated ultrasonic probe including means for repeatedly propagating and constraining ultrasonic surface waves along the length of said probe in a direction such that the evanescent pressure field penetrates said subject in a direction orthogonal to said surface wave,

means for moving said ultrasonic probe about said subject along a plurality of orientations for passing said evanescent pressure field through said subject along said plurality of orientations,

means for detecting the loss of energy in each evanescent pressure field resulting from absorption by said subject during each successive propagation, and

means for processing and correlating each successive detected loss of energy in each propagation for producing a computed tomographic image of a defined plane through said subject.

4,362,059

ULTRASONIC TESTING METHOD AND APPARATUS

Jules Zwyssig, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Switzerland

Filed Apr. 14, 1981, Ser. No. 253,907
Claims priority, application Switzerland, Apr. 16, 1980, 2942/80
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—628 **11 Claims**

1. A method of testing a cast part of the type having a junction region of T- or Y-shaped cross section wherein the part can have an inclusion flaw within the junction region for determining the remaining wall thicknesses between the flaw and the respective outer surfaces, comprising the steps of

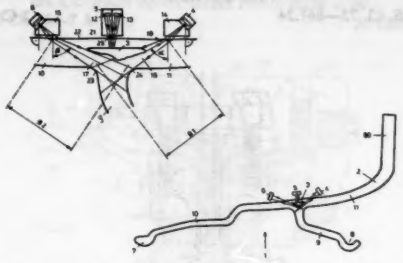
providing at least one first transducer coupled to the outer surface of the part at the top of the T or Y junction for transmitting ultrasonic energy generally in the direction of the leg of the T or Y;

transmitting pulses of energy into the part from the first transducer,

receiving energy resulting therefrom as a measure of thickness of the part between the top outer surface and the flaw;

providing at least one second transducer coupled to the top outer surface of the part for transmitting ultrasonic energy in a direction forming a predetermined acute angle relative to the direction of the first transducer;

locating the second transducer at a position spaced from the first transducer and transmitting pulses of energy into the part so that at least a portion of the energy passes between



the flaw and the junction surface at the back surface of the part;

receiving energy resulting therefrom as a measure of the spacing of the limits of the flaw from the back surface; and

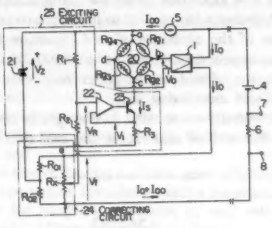
comparing the energy transmissions thus determined with a standard to evaluate the remaining thicknesses.

4,362,060

DISPLACEMENT TRANSDUCER

Tsutomu Okayama, and Takashi Kugaya, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 8, 1980, Ser. No. 195,108
Claims priority, application Japan, Oct. 8, 1979, 54-128920
Int. Cl.³ G01L *9/06, 19/04*
U.S. Cl. 73—708 **15 Claims**



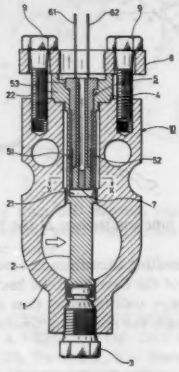
1. A displacement transducer for measuring displacement in a form of an electric signal, comprising a sensor for producing an electric signal in response to the displacement to be measured, an output amplifier for amplifying the electric signal output from said sensor, an exciting circuit for exciting said sensor with current or voltage and controlling the magnitude of excitation in accordance with deviation thereof from a reference value, and a correcting circuit connected to the output side of said output amplifier for correcting non-linearity of the output signal of said sensor, said correcting circuit including a first voltage dividing circuitry having a fixed voltage dividing factor and a second voltage dividing circuitry having a variable voltage dividing factor and connected in parallel to said first voltage dividing circuitry, wherein a voltage dividing point of said first voltage dividing circuitry is connected to a path for exciting said sensor, while a voltage dividing point of said second voltage dividing circuitry is connected to a circuit path for determining said reference value.

4,362,061

VORTEX SHEDDING FLOW MEASURING DEVICE

Shozo Yokogawa; Isamu Ohno, and Yoshio Kurita, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,378
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.24 2 Claims



1. A flow measuring device comprising:

a pipe to carry a fluid to be measured;

an elongate vortex-generating body at least partly disposed in the interior of said pipe;

said vortex-generating body having a recess formed at one end and extending in the axial direction thereof;

an electrode structure having two electrodes and positioned in said recess with the electrodes spaced from the wall thereof and in symmetry with each other with respect to the direction of flow of said fluid;

the mass of said electrode structure being selected and physically distributed with respect to its length to provide that the deflection of the elements of said structure in response to vibrations imposed on said pipe substantially conforms with the deflection of said vortex generating body at least in the region of said electrodes; and

means differentially responsive to changes in the capacitances between the wall of said recess and said two electrodes.

4,362,062

BELT-TENSION GAUGE

Avo Peterson, Meerbusch-Niers, Fed. Rep. of Germany, assignor to V. Löwener Maschinen GmbH, Langenfeld, Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,373
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000549
Int. Cl.³ G01L *5/06*
U.S. Cl. 73—862.47 11 Claims

1. A belt-tension gauge comprising:

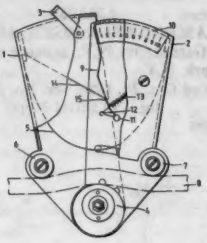
a housing formed by a pair of housing parts pivotally connected for relative swinging movement about a pivot axis;

means forming a rotary bearing between said housing parts at said pivot axis;

a pressure member mounted on the means forming said bearing and adapted to engage one side of a belt whose tension is to be measured;

a respective backing member on each of said housing parts adapted to engage an opposite side of said belt;

spring means in said housing for urging said housing parts in opposite senses about said axis whereby said backing members are displayed away from each other; and



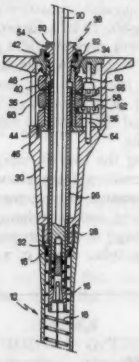
a scale on said housing for indicating the degree of relative displacement of said parts by said spring thereby displaying the tension in said belt.

4,362,063

DEVICE FOR SAMPLING AND DISPENSING ADJUSTABLE VOLUMES OF LIQUID, WITH NUMERICAL DISPLAY

Eric Marteau d'Autry, 72, rue Gambetta, Villiers-le-Bel, France (95)

Filed Dec. 30, 1980, Ser. No. 221,397
Claims priority, application France, Jan. 4, 1980, 80 00130
Int. Cl.³ B01L *3/02*
U.S. Cl. 73—864.1 10 Claims



1. A device for sampling and dispensing adjustable volumes of liquid samples, comprising an upper housing, a substantially cylindrical lower body secured to the upper housing, piston means movable reciprocatingly in the lower body, adjustable stop means limiting the travel of the piston means, means resiliently urging said piston means into contact with said adjustable stop means, a control rod which passes through the housing, and pushbutton means at the upper end of said control rod, wherein the improvement comprises a mechanism to adjust the position of said stop and to display the corresponding sample volume, said mechanism comprising:

an externally threaded sleeve which is capable of cooperating by screw action with an internal thread of the housing and whose lower end constitutes said adjustable stop, said control rod comprising a prismatic control rod and passing through said sleeve and having a profile such that said rod rotates with the sleeve, while permitting a relative sliding of said rod in relation to said sleeve;

a bush mounted to rotate freely in the upper part of the housing, and coaxial with the sleeve;

means for causing said bush to rotate with the control rod, said means removably securing said bush to said rod;

said bush including an inner opening with a diameter of a size to enable said sleeve to penetrate into said bush,

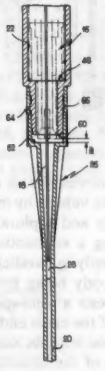
a plurality of volume-indicator drums surrounding said bush in such a way that the units drum rotates with the bush, the other freely rotating drums being equipped with drive means capable of controlling the relative movement of the drums in dependence on the movement of the bush, the sleeve and the control rod rotating as a unit.

4,362,064

POSITIVE-DISPLACEMENT PIPETTE

Eric Marteau d'Autry, 72, rue Gambetta, Villiers-le-Bel, France (95)

Filed Jan. 5, 1981, Ser. No. 222,550
Claims priority, application France, Jan. 11, 1980, 80 00605
Int. Cl.³ B01L *3/02*
U.S. Cl. 73—864.13 **13 Claims**



1. A high-precision positive-displacement pipette for sampling and dispensing of small quantities of liquid, comprising:

a substantially tubular pipette body;

calibrated capillary means at the lower end of said pipette body;

tight fitting piston means movable in said capillary means;

main spring means exerting an upward elastic restoring force against said piston means;

a control rod projecting from the upper end of said pipette body;

means gripping the upper end of the piston means;

resilient members equipping said gripping means and movable apart radially by displacement;

second spring means having a resistance much higher than that of the main spring means and arranged for movement in translation with said control rod, said second spring means exerting a force opposing said displacement of said resilient members;

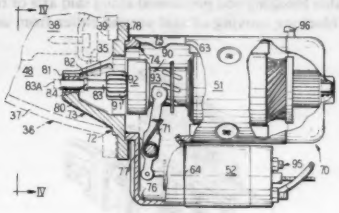
wherein the improvement comprises nozzle means associated with said capillary means and capable of engaging, by fitting together, with the free lower end of the pipette body, said lower end of the pipette body defining an opening permitting the passage of at least a part of said gripping means, and stop means provided on the inner surface of said nozzle means to come into contact with said gripping means and thereby ensure the simultaneous ejection of said nozzle and of the piston which remains captive in the capillary means.

4,362,065

REPLACEMENT STARTING MOTOR ASSEMBLY

Mario Baratti, Chicago, Ill., assignor to Samar, Import and Export, Inc., Rosemont, Ill.

Filed Oct. 8, 1981, Ser. No. 309,605
Int. Cl.³ F02N *15/06*; B22D *19/10*; B23P *6/00*
U.S. Cl. 74—7 A **20 Claims**



1. A rebuilt starter motor adapted from a donor starter motor of one engine installation for use in a different engine installation having a different longitudinal length spatial dimension and starter mountings than said one engine installation, said donor starter motor being of a type having a main motor casing housing an electric motor with an armature driven rotary shaft defining a longitudinal axis and projecting from a forward end of said motor casing, an overlying smaller housing containing a solenoid means with a reciprocable armature projecting from a forward end of said solenoid housing, a pinion sleeve slidably disposed on said shaft with a pinion gear formed on a forward end thereof, a pivotable lever means connected between said pinion sleeve and said solenoid armature, and an end cap assembly for securing the starter in said one engine installation starter mountings connected to said forward ends of said motor casing and solenoid housing and containing said lever means, said pinion sleeve, and a portion of said shaft, comprising:

a core portion consisting of the electric motor, motor casing, solenoid means, lever means, and solenoid housing of said donor starter motor,

a new end cap assembly having spatial dimensions and securement portions for adapting said core portion to fit and mount in said different engine installation, the longitudinal length dimension of said new end cap assembly being different from that of said donor starter motor end cap assembly, and

a new pinion sleeve having a pinion gear suitable for use in said different engine installation and a longitudinal length dimension for adapting operation of said rebuilt starter motor to said different engine installation.

4,362,066

STEP ADJUSTABLE MONOAXIAL VIBRATOR

Ion-Jan Necsoiu; Polidor P. Bratu; Aurelian Ghinea, all of Bucharest, and Gavril Axinte, Braila, all of Romania, assignors to Institutul de Cercetari in Constructii si Economia Constructiilor, Bucharest, Romania

Filed Sep. 19, 1980, Ser. No. 188,733
Int. Cl.³ B06B *1/16*; B65G *27/20*
U.S. Cl. 74—87 **1 Claim**

1. A step adjustable vibrator comprising:

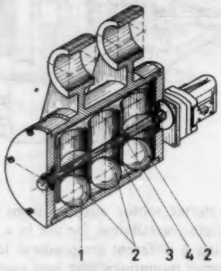
a hollow housing defining a roller track surface on its interior;

a balanced rotor mounted in said housing to rotate about an axis of rotation surrounded by said roller track surface, said rotor having a plurality of axially spaced roller receiving compartments extending transversely of said axis of rotation;

a plurality of rollers carried by said rotor such that they roll along said roller track surface as said rotor turns, one roller being received in each of said compartments, at least

a pair of first rollers being situated on one side of said axis of rotation, a second roller being carried by said rotor in a respective compartment extending to opposite sides of said axis of rotation whereby said second roller can be selectively situated on either side of said axis of rotation depending upon the selected step in adjustment of the mode of operation of the vibrator; and

a movable blocking rod positioned along said axis of rotation and blocking moving of said second roller from one side



of said axis of rotation to the other, said blocking rod being movable to unblock movement of said second roller and allows said second roller to move from one side of said axis to the other, whereby when said second roller is situated on the same side of said axis as said first roller, the vibrator generates vibration at a first level and when said second roller is situated on the opposite side of said axis from said first rollers, the vibrator generates vibrations at a second relatively lower level.

4,362,067

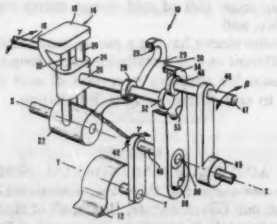
VARIABLE AUTHORITY TRIM MIXER

Robert W. Earl, Palos Verdes Estates, and William H. McCormack, Rancho Palos Verdes, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 21, 1980, Ser. No. 180,224

Int. Cl.³ G05G *11/00*; F02C *9/28*

U.S. Cl. 74—479 **26 Claims**



1. A mechanical variable authority trim mixer of the type used in a system for controlling the flow of fuel from a source of fuel to an engine comprising:

input means responsive to the position of a throttle lever for commanding a desired flow rate of fuel and thus a desired engine speed;

output means operably associated with said input means for changing the flow rate of fuel in response to the input means command;

trim means for modifying the response of said output means from that commanded by said input means and thus alter the fuel flow rate and engine speed from that commanded by the throttle lever position; and

means for limiting the extent of modification by said trim means when the throttle is in selected portions of its stroke.

4,362,068

REMOTE CONTROL DEVICE FOR OUTSIDE REARVIEW MIRROR ADJUSTABLE FROM INSIDE OF A MOTOR VEHICLE

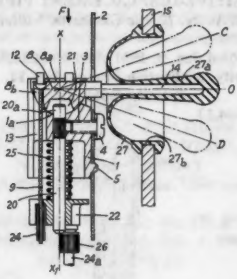
Stephane Manzoni, Saint Claude, France, assignor to Société Anonyme dite: Manzoni-Bouchot, Saint Claude, France

Filed Jul. 16, 1979, Ser. No. 57,773

Claims priority, application France, Jul. 18, 1978, 78 21303; Dec. 20, 1978, 78 35387

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 M **5 Claims**



1. A remote control device for an outside rearview mirror adjustable from inside the vehicle by means of a cable transmission, comprising a body and a plurality of cables extending through the body along a substantially straight course and guided therein substantially in parallel to the longitudinal axis of the said body, the body being provided with a spherical socket against which rests a semi-spherical control member which is fast with one of the cable ends, wherein the said body is fitted on a vehicle door with its longitudinal axis in parallel to the longitudinal axis of the vehicle and wherein the semi-spherical control member is fast with an operating lever which is perpendicular to the axis of the said semi-spherical member and extending inside the said vehicle at a right angle to the longitudinal axis of the body when the said semi-spherical member is in the neutral position, said body being provided with two diametrically opposed openings whose edges ensure the guiding of the operating lever and of the semi-spherical control member having helical gradients against which move two studs integral with the semi-spherical control member, so that the movement of said studs against the helical gradients imparts a rotary movement to the semi-spherical member, the said body being provided between the two diametrically opposed openings with a third quadrangular opening in which moves the said control lever.

4,362,069

HIGH EFFICIENCY, ABRASION RESISTANT PRODUCT AND PROCESS

James L. Giatras, Spring City; Edward B. Golas, Conshohocken, and Wayne F. Reed, Norristown, all of Pa., assignors to Markel Corporation, Norristown, Pa.

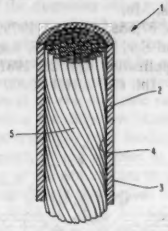
Continuation-in-part of Ser. No. 25,901, Apr. 2, 1979. This application Jul. 16, 1980, Ser. No. 169,280

Int. Cl.³ B32B *15/00*; F16C *1/10*; F16L *11/06*

U.S. Cl. 74—501 P **21 Claims**

1. An extruded tubular product consisting essentially of a mixture of a resin of fluorocarbon polymers and a polymer of arylene sulfide in the range of from about 5 to 25 weight parts per hundred resin.

18. In a push-pull cable system comprising an extruded tube and a cable within said extruded tube, said cable moveable



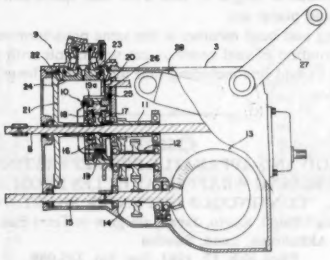
within said extruded tube, wherein said extruded tube is the extruded tubular product as in claims 1, 3, 4, 8, or 13.

4,362,070

CHANGE SPEED APPARATUS FOR A TRACTOR

Yoshinobu Murayama, Sakai, and Tetsuaki Hayashi, Osaka, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 26, 1980, Ser. No. 181,343
Claims priority, application Japan, Aug. 30, 1979, 54-112189
Int. Cl.³ F16H 15/10, 17/04
U.S. Cl. 74—691 4 Claims



1. A change speed apparatus for a tractor comprising:

Planetary reduction means (10) including a sun gear (16) mounted on a main shaft (8) rotatable by engine output, planet gears (18) meshing with the sun gear (16), and an internal gear (19) meshing with the planet gears (18),

frictional stepless change speed means (9) including a driven disc (20) operatively connected to the internal gear (19), and a plurality of drive discs (24) contacting an outer periphery of the driven disc (20) and adapted to rotate on axes normal to a rotational axis of the driven disc (20), and

a gear (21) mounted on the main shaft (8) to drive the frictional stepless change speed means (9),

the driven disc (20) being axially shiftable to steplessly change the revolving speed of the planet gears (18) corresponding to the travelling speed of the tractor,

characterized in that the gear (21) mounted on the main shaft (8) to drive the frictional stepless change speed means (9) has a large diameter, the planetary reduction means (10) is located in a space defined by the large diameter gear (21) and the drive discs (24), and the driven disc (20) engages the outer periphery of the internal gear (19) to be axially movable but not rotatable relative to the internal gear (19).

4,362,071

CAN OPENER FOR TAB-TYPE CLOSURE

Jess M. Coker, 1803 E. Osborne Ave., Tampa, Fla. 33610

Filed Feb. 20, 1981, Ser. No. 236,140
Int. Cl.³ B67B 7/40
U.S. Cl. 81—3.46 R 1 Claim

1. An opener for opening a closure of a container, the closure including a ring member for engagement with a weakened portion of the container, the opener comprising in combination:

a body portion having a wide bottom for pivoting on the container during the opening of the closure;

said bottom of said body portion being concaved inwardly to define two longitudinal legs for pivoting on the container;

a head portion secured to said body portion;

a lower lip secured to said head portion for insertion under the ring member of the closure;

a mouth portion for receiving the ring member after said lower lip is inserted thereunder;

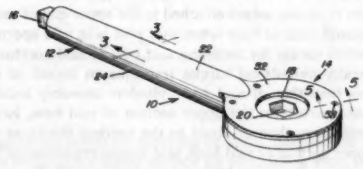
a handle secured to said body portion enabling a person to grasp the opener, insert the lower lip under the ring member, and pivot said body member on the container to pull the ring member away from the container thereby causing the ring member to engage the weakened portion of the container to create an opening therein.

4,362,072

WRENCH

Jerry W. Tillman, 2209 Sybel Dr., Mobile, Ala. 36609

Filed Aug. 1, 1980, Ser. No. 174,586
Int. Cl.³ B25B 17/00
U.S. Cl. 81—57.29 7 Claims



1. A wrench containing an elongated handle and a head, said head comprising a rotatable flat disk containing an aperture therein for engaging a nut or bolt head, a housing enclosing the rotatable disk for rotation thereof relative to the housing, a gear disk connecting with said rotatable disk within the housing and containing gear teeth about a periphery thereof, an elongated drive shaft positioned through said handle and terminating at one end at a point beyond said handle to be engaged by a rotating means and terminating at another end in a rotatable gear drive means containing gear teeth which intermesh with said gear teeth on said gear disk, said gear drive

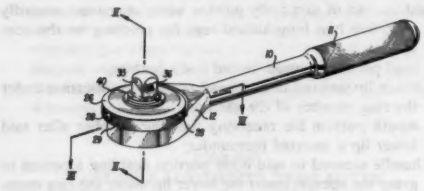
means being rotatable about a longitudinal axis of said handle and about a line perpendicular to a rotating axis of said gear disk with its connecting rotatable disk, said gear disk with its connecting rotatable disk being of circular shape having the gear teeth of said gear disk being contained within a uniform strip forming the circumference of said gear disk, said gear disk including a circular plate positioned within the circumference of said gear teeth, said plate containing a plurality of apertures, said rotatable disk including a plurality of posts positioned thereon to match the positions of said apertures on said plate, said rotatable disk being secured to said gear disk by the insertion of said posts in said apertures.

4,362,073

REVERSIBLE WRENCH

Don L. Cloud, Springfield, Mo., assignor to L. C. Tool Distributors, Inc., Springfield, Mo.

Filed Oct. 2, 1980, Ser. No. 193,303
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—59.1 **5 Claims**



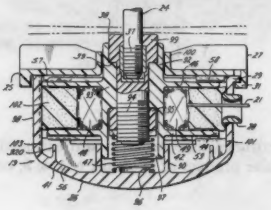
1. A wrench, comprising:
handle means having two ends;
a base having an upper section and a lower section extending from one end of said handle means;
an aperture through said base;
a generally cylindrical post having upper and lower ends, having a flange at the lower end thereof, extending through said aperture, said aperture being shaped so that said post fits snugly in the lower section of said base and the upper section of said base is spaced from said post, said aperture being defined in the upper section of said base by a plurality of interconnecting part-cylinders;
socket retaining means attached to the upper end of said post located outside base when said post is in said aperture;
retention means for retaining said post in said aperture;
generally cylindrical torque transmission means of radius less than that of said part-cylinders movably located in said aperture in the upper section of said base, having a height less than or equal to the vertical thickness of the upper section of said base, said torque transmission means having a generally horizontally extending hole;
said base further comprising horizontal slots in the upper section of said base;
reversing means comprising a reversing hub located around and above the upper section of said base, having a hole located radially outwardly of one of said cylindrical torque transmission means;
non-elastic connecting means securing said hub to said torque transmission means by extending through said hole in said hub through said slot into said hole in said torque transmission means; and
locking means for releasably retaining said reversing means.

4,362,074

METHOD FOR CUTTING VEGETATION

James L. Kwater, Birmingham, Ala., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 67,585, Aug. 17, 1979, Pat. No. 4,269,372, which is a division of Ser. No. 934,226, Aug. 15, 1978, Pat. No. 4,189,833. This application Apr. 23, 1981, Ser. No. 256,805
Int. Cl.³ A01D *50/00*
U.S. Cl. 83—13 **1 Claim**



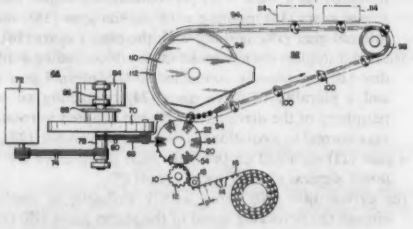
1. A method for feeding line in a vegetation cutting apparatus while cutting vegetation growing on turf, comprising:
rotating a spool member at a predetermined speed about an axis in a cutting plane, said spool containing a supply of flexible non-metallic line wound in the direction of rotation of said spool and having a free traveling end portion extending from said spool through an aperture in a head member surrounding said spool and into said cutting plane,
rotating said head member at a speed less than the predetermined speed of rotation of said spool member to force an incremental length of line from said spool and into the cutting plane, and
rotating said head member at the same predetermined speed of rotation of said spool to cut vegetation with said free end of said line including said incremental length of said line.

4,362,075

METHOD AND APPARATUS FOR SEPARATING AND FEEDING WRAPPED ARTICLES FROM A CONTINUOUS DISPENSER SHEET

Yoshikazu Utsumi, Kyoto, Japan, assignor to Tetra Pak International Aktiebolag, Lund, Sweden

Filed Feb. 17, 1981, Ser. No. 235,088
Claims priority, application Japan, Feb. 22, 1980, 55/21995
Int. Cl.³ B26D *5/22*
U.S. Cl. 83—42 **8 Claims**



8. A method for separating a wrapped article from a continuous strip-like dispenser sheet in which the articles are separately wrapped at positions spaced by a substantially equal pitch in the longitudinal direction of the sheet and for feeding the separated articles at desired pitches larger than the pitch of the articles in the dispenser sheet, comprising the steps of:
defining a movable surface on which the dispenser sheet can

be supplied, said movable surface being movable along its surface;

intermittently moving said movable surface in the longitudinal direction of the dispenser sheet to be fed thereon, each intermittent movement of said movable surface covering a desired distance which is equal to the pitch of the articles in the dispenser sheet multiplied by an integer while applying a suction in said movable surface to yieldably hold the dispenser sheet on the movable surface;

intermittently feeding the dispenser sheet onto said movable surface, each intermittent feed feeding a single wrapped article by the pitch of the articles in the dispenser sheet and terminating at the same point in time as the termination of each intermittent movement of said movable surface; and

separating the article from other wrapped articles in the dispenser sheet, when said movable surface is substantially stopped between the intermittent movements.

4,362,076

ELECTROSTATIC COPYING APPARATUS

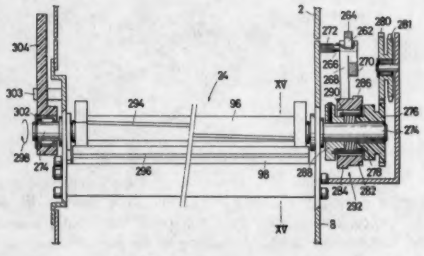
Koichi Sasaki, Osaka; Yasuji Sumida, Nara, and Hiroshi Ishida, Ibaragi, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 29,053, Apr. 11, 1979, Pat. No. 4,295,731. This application Jul. 23, 1980, Ser. No. 171,541

Claims priority, application Japan, Apr. 17, 1978, 53-45490; Apr. 17, 1978, 53-50972; Apr. 17, 1978, 53-50973; Apr. 19, 1978, 53-47309; May 23, 1978, 53-61822; May 23, 1978, 53-70043; May 23, 1978, 53-70044; May 23, 1978, 53-70045; May 23, 1978, 53-70046; May 23, 1978, 53-70047; May 30, 1978, 53-65949; May 30, 1978, 53-74580; May 30, 1978, 53-74581; May 30, 1978, 53-74582; May 31, 1978, 53-66119

Int. Cl.³ B23D *25/16*; B26D *1/62*

U.S. Cl. 83—285 **2 Claims**



1. A cutting apparatus for use in cutting copying paper sheets from a roll of copying paper in an electrostatic copying apparatus of the type including means for feeding copying paper along a copying paper path, a moving member moving along an exposure path during exposure of an original document to be copied, and a pivotally mounted paper cut detecting member positioned along the path of the moving member to be pivoted thereby to an actuated position, said cutting apparatus comprising:

a fixed blade immovably mounted on a frame, said fixed blade having a longitudinally straight cutting edge;

a rotary shaft mounted for rotation on said frame;

a rotary blade fixed to and carried by said rotary shaft for rotation therewith, said rotary blade having a spirally curved cutting edge adapted to cooperate with said straight cutting edge of said fixed blade to cut a copying paper sheet;

a boss member fixed to said rotary shaft;

a gear rotatably mounted about said rotary shaft, said gear rotating continuously during operation of the copying apparatus, said gear having a boss directed toward said boss member;

a ratchet wheel mounted about said boss member and said boss;

a spring positioned inwardly of said ratchet wheel and surrounding said boss member and said boss, said spring having a first end connected to said boss member and a second end connected to said ratchet wheel, said spring being wound to tighten in a rotating direction on said boss member and said boss;

said ratchet wheel having extending from diametrically opposite positions of the perphery thereof a control tooth and a rotation lock tooth;

a double cog member having a control cog and a rotation lock cog, said double cog member being mounted on said frame for pivotal movement between a first position, at which said control cog engages said control tooth thereby preventing tightening of said spring, and a second position, at which said control cog is out of engagement with said control tooth, thereby enabling said spring to tighten and transmit rotation of said gear to said rotary shaft and said rotary blade, and at which said rotation lock cog engages said rotation lock tooth after a predetermined rotation of said rotary blade and to prevent further rotation thereof;

the length by which said rotation lock tooth extends from the periphery of said ratchet wheel being greater than the length by which said control cog extends from said periphery, thus ensuring engagement of said rotation lock tooth by said rotation lock cog;

an inclinable member mounted on said frame and adapted to be moved to a pivoted position by the paper cut detecting member upon movement thereof to the actuated position thereof; and

said double cog member having contact means, contacted upon movement of said inclinable member to said pivoted position thereof, for enabling pivoting of said double cog member from said first position thereof to said second position thereof.

4,362,077

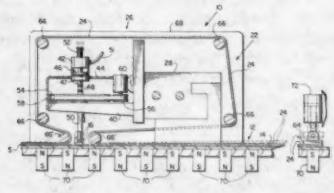
APPARATUS FOR WORKING ON SHEET MATERIAL AND HAVING MAGNETIC HOLDDOWN MEANS

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Mar. 9, 1981, Ser. No. 242,067

Int. Cl.³ D06H *7/00*

U.S. Cl. 83—453 **13 Claims**



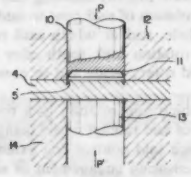
1. In an apparatus for working on sheet material and having means defining a support surface for supporting sheet material spread thereon, means for holding the sheet material in fixed position relative to the support surface, a tool carriage assembly, a tool supported by the tool carriage assembly, and means for moving the tool carriage assembly and the tool relative to the support surface to move the tool in working relation to sheet material spread on the support surface, the improvement wherein said means for holding the sheet material comprises at least one strip of flexible material extending longitudinally of said support surface to overlie associated portions of sheet material spread thereon, magnetic means for biasing portions of said one strip toward said support surface to clamp the associated portions of the sheet material in fixed position rela-

tive to said support surface, and strip supporting means for maintaining another portion of said one strip in the region of said tool in spaced relation to said support surface as said tool moves relative to said support surface and in working relation to sheet material spread thereon.

4,362,078
METHOD OF BLANKING

Tatsuo Ohnishi; Takeshi Uemura, and Teruo Nakajima, all of Osaka, Japan, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 5, 1981, Ser. No. 222,232
Claims priority, application Japan, Mar. 25, 1980, 55-036910
Int. Cl.³ B21D *28/26*
U.S. Cl. 83—862 **6 Claims**



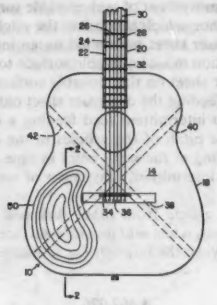
1. A method of blanking, comprising the steps of: providing a lancing punch having an endless lancing edge projecting outwardly from one end thereof, which lancing edge is of a generally V-shaped cross section with the exterior side of the V-shaped lancing edge extending perpendicular to the material sheet which is to be punched; moving said lancing punch into engagement with a surface of said material sheet for causing the lancing edge to penetrate said surface and form an endless groove in said sheet, which groove projects into said sheet from said surface and has a V-shaped cross section, with the outer peripheral edge of said groove extending at right angles to said surface; positioning said material sheet on a support having a knockout opening therein corresponding to the profile of the proposed blank as defined by said endless groove so that said proposed blank is aligned with and positioned over said knockout opening; providing a blanking punch having an endless blanking edge projecting from one end thereof, which blanking edge corresponds to and is adapted to occupy said endless groove; moving said blanking punch into engagement with said material sheet so that the blanking edge occupies said groove; and then movin said blanking punch towards the material sheet for cutting the blank from the material sheet and moving same into said knockout opening.

4,362,079
ACCENTUATOR PLATE FOR VIBRATING SOUNDBOARD IN STRINGED MUSICAL INSTRUMENTS

Charles J. Kelly, San Francisco, Calif., assignor to Thomas L. Ribbecke, San Francisco, Calif., a part interest

Filed May 15, 1981, Ser. No. 264,195
Int. Cl.³ G10D *3/02*
U.S. Cl. 84—291 **6 Claims**

1. In a vibrating soundboard stringed musical instrument characterized by a hollow body, a neck extending therefrom and defining the longitudinal axis of said instrument, and one or more strings extending under tension from the distant end of the neck to a bridge located on a top surface of the body opposite the neck, the improvement comprising an accentuator plate seated in an opening provided for that purpose in said top surface and secured at the periphery thereof to the edge of said top surface around said opening, said accentuator plate having an outward generally convex contour and having an inside generally concave contour, said plate and said opening being

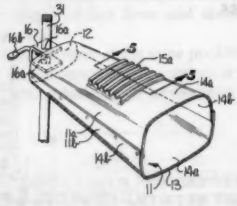


laterally offset in said body to one side of the longitudinal axis and closely adjacent said bridge.

4,362,080
STACCATO COWBELL

Ramon O. DeArmas, P.O. Box 668702, Charlotte, N.C. 28208

Filed Jul. 27, 1981, Ser. No. 287,161
Int. Cl.³ G10D *13/06*
U.S. Cl. 84—406 **9 Claims**



1. A musical instrument, comprising a rigid sounding chamber, said sounding chamber being generally oval in lateral cross-section and having four generally trapezoidal shaped sides, said sounding chamber having an open larger end and a closed smaller end, support attachment means externally carried by said sounding chamber, a plurality of generally parallel ribs externally positioned in resonant relation to an adjacent side of said sounding chamber, said plurality of ribs being formed as an integral unit and being affixed to the adjacent side of the sounding chamber, said plurality of ribs adapted for successive striking as by a drumstick during play of the musical instrument whereby staccato sounds may be selectively intermittently produced during such play.

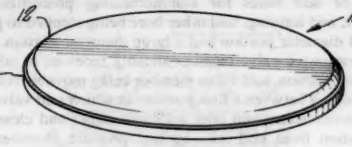
4,362,081
LAMINATED HEAD OF PLASTIC SHEET MATERIAL AND NONIMPREGNATED SYNTHETIC WOVEN FABRIC MATERIAL

Donald R. Hartry, La Canada, Calif., assignor to Remo, Inc., North Hollywood, Calif.

Filed Oct. 6, 1980, Ser. No. 194,461
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—414 **11 Claims**

1. A head for a drum or similar musical instrument comprising a synthetic plastic sheet material laminated to each side of

a synthetic fabric material woven from a fiber yarn by means of an adhesive resin composition without impregnating the fabric



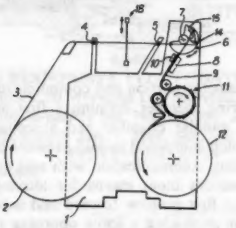
material, the fabric material forming the primary tension load carrier.

4,362,082

WEAVING LOOM FOR PROVIDING A LADDERFREE WOVEN FABRIC

Frantz M. J. Boucraut, Troyes, France, assignor to Valton S.A., Troyes, France

Filed Nov. 7, 1980, Ser. No. 204,905
Claims priority, application France, Nov. 13, 1979, 79 27929
Int. Cl.³ D04C 5/00
U.S. Cl. 87—24 **8 Claims**



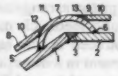
1. A loom for weaving fabric having warp and weft threads, comprising a common support shaft, thread guides fixedly mounted side by side on said common support shaft, each of which thread guides has a substantially semicircular outer edge, at least two holes through which an associated warp thread may pass successively, an opening for the insertion of weft threads through the assembly of thread guides and a slot which connects the opening of each said thread guide with the outer edge thereof, wherein the common support shaft has a longitudinal axis and is drivably mounted for rotation between a first and a second position through an angle of approximately 180° about said axis, wherein the semicircular outer edge of the thread guides has a centre substantially coinciding with said axis, wherein said at least two holes are provided in each thread guide at locations close to said outer, semicircular edge of said guide, wherein said slot is curved in a direction opposite to the direction of rotation executed by the thread guide in moving from the first to the second position, and wherein there is provided a stationary table for supporting the woven fabric produced by the loom, which table is associated with a control plate and is positioned in a plane which includes said axis at a point located substantially diametrically opposite the last hole of said at least two holes through which warp thread passes when the thread guide is in its first position, each warp thread passing from said last hole towards said stationary table, wherein the insertion of the weft thread into said openings by said guides takes placed whilst said guides are in said first position, and said weft threads leave said slots when the thread guides are in their said second position.

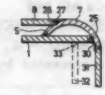
4,362,083

CASING FOR AN ARMOURED VEHICLE

Hermann Straub, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 30, 1979, Ser. No. 99,078
Claims priority, application Switzerland, Dec. 4, 1978, 12352/78
Int. Cl.³ F41H 7/04
U.S. Cl. 89—36 H **11 Claims**





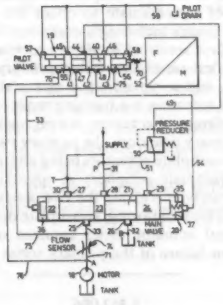
1. A casing of an armoured vehicle comprising
at least one pair of intersecting walls, one of said walls having an outer plate with a longitudinal edge and an inner plate and the other of said walls having at least one outer plate with a longitudinal edge;
an arcuate shell between said longitudinal edges of said intersecting walls, said arcuate shell having a curvilinear cross-section with a pair of edges; and
welds securing said edges of said shell to respective plates of said plates and each said plate to said shell to define a closed box girder along said longitudinal edges.

4,362,084

HYDRAULIC ACTUATOR CONTROLS

Ronald B. Walters, Wembley, England, assignor to Sperry Corporation, Troy, Mich.

Filed Jun. 13, 1980, Ser. No. 159,362
Claims priority, application United Kingdom, Jun. 15, 1979, 7920932
Int. Cl.³ F15B 13/16
U.S. Cl. 91—47 **12 Claims**



1. A device for controlling the flow of fluid from at least one pump to a hydraulic load responsively to an electrical input signal, said one pump being a positive displacement pump and having a pressure outlet, said device comprising a flow sensor serially connected to the pressure input for conducting fluid to the load, the series circuit consisting of the flow sensor and the load being directly connected to said pump pressure outlet, said flow sensor being adapted to generate a pressure difference dependent upon the rate of fluid flow therethrough; means defining a bleed-off path connected directly to said

pump pressure outlet and by-passing said series circuit consisting of said flow sensor and said load, said means including a fluid pressure-operated main valve having a main spool for regulating fluid flow from the pump pressure outlet and through said bleed-off path and thereby inversely regulating the fluid flow to said load; a pilot valve for controlling said main valve, said pilot valve including a pilot spool for regulating the fluid pressure for operating said main valve; an electrical force motor for producing a first force dependent upon said electrical input signal and for applying said first force to said pilot spool; an opposed piston arrangement operative upon said pilot spool; and hydraulic feedback means for applying said pressure difference produced across said flow sensor to said opposed piston arrangement in a direction to apply to said pilot spool a second force opposed to said first force.

4,362,085

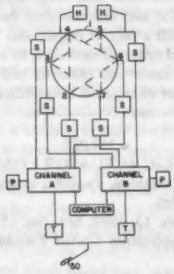
FLIGHT CONTROL SYSTEM

Peter R. Venuti, Jr., Turnersville, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 47,522, Jun. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 853,785, Nov. 21, 1977, abandoned. This application May 29, 1980, Ser. No. 154,557

Int. Cl.³ F01B *1/00*; F15B *13/16*

U.S. Cl. 91—186 **3 Claims**



1. A helicopter swashplate drive mechanism comprising a first and second series of swashplate actuators spaced around the periphery of a swashplate to effect the control thereof, servo amplifier means including a computer for electronically actuating the first series of actuators to control swashplate operation, the first series thus being primary control swashplate actuators, said servo amplifier means also operating the second series of actuators in a tracking mode, the second series thus being supplemental actuators which track the operational status of the primary actuators, the primary swashplate and the supplemental swashplate actuators being alternately positioned around said swashplate periphery at approximately 60°, said computer separately energizing the two series of actuators for controlling, and for monitoring, swashplate operation whereby the supplemental actuator series assumes operation of the swashplate upon failure of the primary series of actuators.

4,362,086

PRESSURE LIMITER FOR HYDRAULIC BRAKE BOOSTER

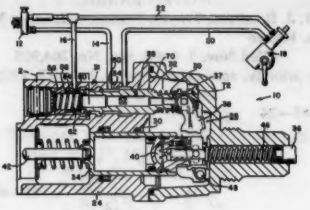
Dean E. Runkle, LaPorte, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 936,271, Aug. 23, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,972

Int. Cl.³ F15B *0/42, 13/14*

U.S. Cl. 91—391 R **1 Claim**

1. A hydraulic brake booster having a housing with a pair of bores therein, said bores communicating with a pressure chamber, a pressure responsive piston slidably received in one of said bores, said piston cooperating with means for effecting a brake application responsive to movement of said piston; an inlet, an outlet and a vent port all communicating with the other of said bores for communicating pressurized fluid through said housing, said other bore being stepped to provide a small diameter portion and a large diameter portion, a pressure responsive valve member slidably received in said small diameter portion, said valve member being movable relative to said housing between a first position in which said valve member communicates said inlet with said outlet and closes communication from said inlet to said pressure chamber while communicating said vent port with said pressure chamber and a second position in which said valve member restricts communication between said inlet and outlet and opens communication from said inlet to said pressure chamber while closing communication between said pressure chamber and said vent port, a ring member slidably received in said large diameter portion and cooperating with said valve member to define an annular chamber radially disposed between said valve member



and said large diameter portion and communicating with said vent port, said ring member defining a first area which is exposed to said annular chamber and a second oppositely disposed area which is exposed to said pressure chamber, said vent port providing communication with said annular chamber, yieldable resilient input means for moving said valve member from said first position toward said second position, said ring member producing a force opposing movement of said valve member toward said second position responsive to the pressure differential between pressurized fluid in said pressure chamber acting on said second area and vent port pressure in said annular chamber acting on said first area, said input means yielding responsive to said force at a predetermined pressure differential to prevent further communication of pressurized fluid to said pressure chamber and said vent port intersecting said other bore substantially at an axial intersection between said small and large diameter portions to remain continuously open to said annular chamber in all positions of said pressure responsive valve member during the brake application.

4,362,087

FULLY COMPENSATED FLUID CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

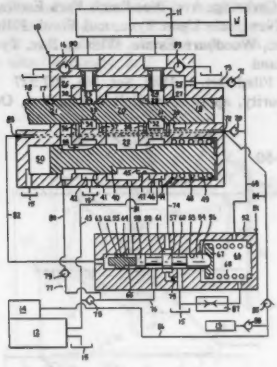
Filed Mar. 26, 1981, Ser. No. 247,887

Int. Cl.³ F15B *13/08*

U.S. Cl. 91—421 **30 Claims**

23. A valve assembly comprising a housing having an inlet chamber connected to a pump and an outlet chamber connected to exhaust means, means operable to selectively communicate said inlet and said outlet chambers with a fluid motor, first control orifice means interposed between said inlet chamber and said fluid motor, second control orifice means interposed between said fluid motor and said exhaust means, positive load fluid throttling means between said inlet chamber and said pump, and negative load fluid throttling means between said outlet chamber and said exhaust means, said positive and said negative load fluid throttling means controllable by a fluid power amplifying and control means and operable either to

throttle fluid flow by said positive load fluid throttling means to maintain a relatively constant pressure differential across said first control orifice means or to throttle fluid flow by said



negative load fluid throttling means to maintain a relatively constant pressure differential across said second control orifice means.

4,362,088

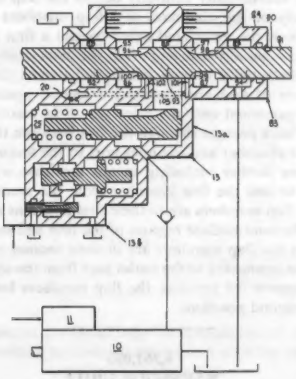
LOAD RESPONSIVE FLUID CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 109,053, Jan. 2, 1980. This application Jan. 7, 1980, Ser. No. 109,806

Int. Cl.³ F15B *13/04*

U.S. Cl. 91—446 **35 Claims**



1. A load responsive valve assembly comprising a housing having an inlet chamber connected to a pump, a supply chamber connected to a fluid motor, and exhaust means, control orifice means interposed between said supply chamber and said fluid motor, and fluid throttling means interposed between said inlet chamber and said supply chamber, first control means operable through said fluid throttling means to maintain a pressure differential across said control orifice means at a controlled constant level and second control means operable through said first control means to vary the level of said constant pressure differential proportionally in response to a control signal.

4,362,089

VALVE SYSTEM

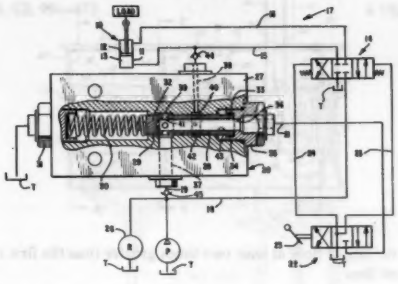
Kurt B. Melocik, Mazon, and Robert W. Earley, Minooka, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00766, § 371 Date Jun. 16, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO81/03689, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 16, 1980, Ser. No. 245,228

Int. Cl.³ F15B *11/16*

U.S. Cl. 91—461 **8 Claims**



1. A pressure regulating valve (**20**) comprising:

wall means (**27**) defining a valve chamber (**28**), a first inlet port (**37, 39**), a second inlet port (**38, 40**), and an outlet port (**36**);

a movable valve member (**29**) in said chamber (**28**) defining a first transfer passage (**41**) adjacent said first inlet port (**37, 39**), a second transfer passage (**42**) adjacent said second inlet port (**38, 40**), and an outlet passage (**43**) communicating at all times with said transfer passages and said outlet port (**36**); and

means for biasing the valve member (**29**) to align said first transfer passage (**41**) with said first inlet port (**37, 39**) and preselected to permit fluid pressure in said outlet passage (**43**) to urge said valve member (**29**) against the biasing action thereof to variably partially disalign said first transfer passage (**41**) relative to said port (**37, 39**) and thereby regulate the fluid pressure in said outlet passage (**43**), said second transfer passage (**42**) being disposed to be fully disaligned with said second inlet port (**38, 40**) when said first transfer passage (**41**) is so partially disaligned with said first inlet port (**37, 39**) and to be aligned with said second inlet port (**38, 40**) by said biasing means (**30**) in the absence of fluid pressure in said outlet passage (**43**), and provide adjustable communication between said second inlet port (**38, 40**) to said second transfer passage (**42**) in the absence of fluid pressure delivered to said outlet passage (**43**) through said first inlet port (**37, 39**) and thereby regulate the pressure of the fluid delivered from said second transfer passage (**42**) to said outlet passage (**43**).

4,362,090

AIR CIRCULATING DEVICE AND METHOD

Isaac C. Whiteley, P.O. Box 294, Redmond, Oreg. 97756

Filed Aug. 21, 1979, Ser. No. 68,383

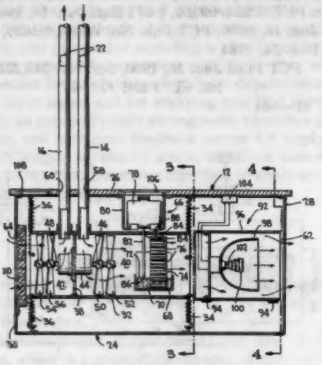
Int. Cl.³ F24F *13/00, 7/00*

U.S. Cl. 98—33 A **22 Claims**

8. A method of circulating air in a room to reduce temperature stratification comprising the steps of

drawing hot air from the ceiling of the room and discharging the hot air at the floor of the room at a first volumetric rate of flow; and

drawing cold air from the floor of the room and discharging the cold air at the ceiling of the room at a second volumetric rate of flow at least two times greater than the first rate of flow.

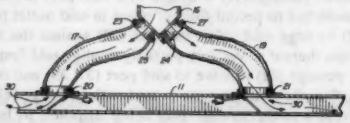


4,362,091

AIR DEFLECTION DUCT ASSEMBLY

Howard W. Cox, Tempe, Ariz., assignor to Mission Marketing Corp. of Arizona, Tempe, Ariz.

Filed Apr. 13, 1981, Ser. No. 253,596
Int. Cl.³ F24F 7/06
U.S. Cl. 98—40 C **10 Claims**



6. An air deflection duct assembly for adapting connection of an evaporative cooler to an existing refrigeration air conditioning duct including in combination:

a horizontal air duct having a top and a bottom;

first and second plate means for attachment to first and second spaced holes in the top of said air duct therein, said first plate means adapted for attachment over said first hole and having an opening therethrough in communication with such first hole and said second plate means for attachment over said second hole and having an opening therethrough for communication with such second hole;

first and second collar means attached, respectively, to said first and second plate means and extending around the peripheries of the openings in said first and second plate means to a predetermined distance above such openings; and

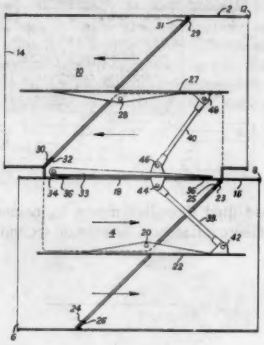
first and second normally biased closed, pressure-opened deflector means for closing the openings in said respective first and second plate means and each adapted to open at an angle into said air duct to which said first and second plate means are attached in response to air flow through said first and second collar means, respectively, to the openings for deflecting air in said air duct in opposite directions away from the space between the first and second spaced holes therein.

4,362,092

AUXILIARY VENTILATION SYSTEM FOR UNDERGROUND SITES

Gordon Elliott, Elm Rd., Ponteland, Northumberland; Stephen Elliott, 13 Corbridge Ave. Woodlands Park Estate, Wideopen, Gosforth, Newcastle Upon Tyne, and Frank Elliott, 53 Willoughby Dr., Woodburn Estate, Whitley Bay, Tyne & Wear, all of England

Filed Oct. 1, 1981, Ser. No. 307,527
Claims priority, application United Kingdom, Oct. 6, 1980, 8032100
Int. Cl.³ E21F 1/00
U.S. Cl. 98—50 **6 Claims**



1. An auxiliary ventilation system for an underground site comprising an air box for location at a region to be ventilated, first and second chambers extending through said air box, an inlet port and an outlet port associated with each of said chambers, the intermediate regions of said chambers being in communication with one another, and a substantially flat flap member mounted in each of the chambers to be pivotal about an axis extending substantially centrally across the flap member and transversely of the chamber, said flap members each being pivotal about the associated axis between a first position extending substantially fore and aft of the associated chamber to permit substantially unimpeded flow between the inlet and outlet ports of said chamber and a second position making sealing engagement with the sidewalls of the associated chamber to define a passage through the box between the inlet port to the first chamber and the inlet port to the second chamber, the air box further including means movable with the flap members to seal the first chamber from the second chamber when the flap members are in their first positions and to interconnect the intermediate regions of the first and second chambers when the flap members are in their second positions, an exhaust fan connected to the outlet port from the second chamber, and means for pivoting the flap members between their first and second positions.

4,362,093

BARBEQUE GRILL

Billie G. Griscom, Poste Restante, Jan Smuts Airport 1627, South Africa

Filed Jul. 18, 1980, Ser. No. 167,371
Int. Cl.³ A47J 27/00
U.S. Cl. 99—339 **2 Claims**

1. An improved barbeque grill comprising:

a first horizontally-supported surface;

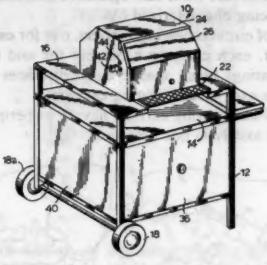
a plurality of rigid vertical support members attached to said first surface;

a second horizontally-supported surface mounted parallel to and above said first surface and attached to said vertical support members, said second surface having a recessed area along at least one side;

a firebox mounted to but beneath said second surface, part of said firebox extending below the recessed area of said second surface;

a grate mounted in said recessed area;

a removeable enclosure moveably mounted on said second surface, said enclosure sized to encompass a substantial portion of said recessed area and a portion of said second surface simultaneously; and



a drip pan mounted on said first surface beneath a portion of the grate not covering the firebox,

whereby the barbeque can be used simultaneously or individually for baking, grilling, roasting and warming dependent upon the placement of the foodstuff on the grate or the second surface and the location of the enclosure.

4,362,094

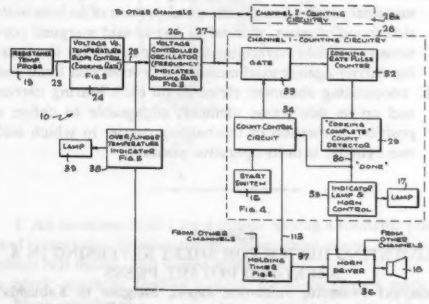
COOKING TIME CONTROL SYSTEM

Louis S. Polster, 28034 Cero Dr., Saugus, Calif. 91350

Continuation of Ser. No. 732,214, Oct. 14, 1976, abandoned, which is a continuation of Ser. No. 627,089, Oct. 30, 1975, abandoned. This application May 4, 1978, Ser. No. 902,986

Int. Cl.³ A47J *23/12*

U.S. Cl. 99—342 **32 Claims**



14. Apparatus for indicating the completion of cooking of food in a cooking medium contained in a cooking vessel, comprising:

a temperature transducer situated to sense the temperature of the medium in said vessel during cooking,

cooking rate slope control circuitry responsive to the output of said transducer for providing a signal that is proportional to the cooking rate of said food at the sensed temperature,

cooking rate pulse generating means for providing a pulse train having a pulse rate proportional to said signal from said slope control circuitry,

a start switch,

a counter connected to count said pulses from said pulse generating means beginning when said switch is actuated, and

cooking complete count detector, responsive to the contents of said counter, for providing a "DONE" signal upon detecting that said counter has reached a certain preset count indicating that cooking is complete.

4,362,095

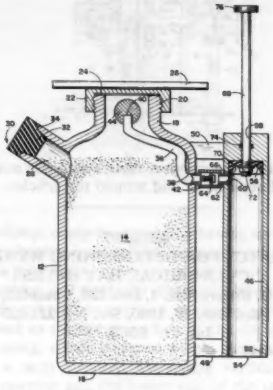
STORAGE CONTAINER FOR GROUND COFFEE

Charles Wheatley, Tulsa, Okla., assignor to Phyllis A. Wheatley, Tulsa, Okla., a part interest

Filed Mar. 2, 1981, Ser. No. 239,176

Int. Cl.³ B65D *81/20*; A23B *0/00*; B65D *51/16*

U.S. Cl. 99—472 **4 Claims**



1. A storage container comprising a housing having one closed end and one open end, removable sealing cover means provided for said open end, discharge port means provided in the sidewall of the housing and interposed between the open end and closed end thereof, sealing plug means removably disposed in said discharge port means, handle means secured to the outer periphery of the housing means, pump chamber means provided in the handle means, passageway means having one end open to the upper portion of the pump chamber and the opposite end open to the interior of the housing between the cover means and discharge port means providing communication between the pump chamber means and interior of the housing, check valve means interposed in the passageway means for precluding backflow of fluid therethrough, and reciprocal plunger means disposed in said pump chamber means for selectively creating a vacuum in the interior of the housing.

4,362,096

TYING MACHINE

John F. Hanscom, Rehoboth, Mass., assignor to H. F. Hanscom & Company, Inc., Providence, R.I.

Filed Feb. 12, 1981, Ser. No. 233,931

Int. Cl.³ B65B *13/16*

U.S. Cl. 100—10 **4 Claims**

1. A tying machine for tying articles of varying size with material comprising a pair of arms mounted for pivotal movement in a single plane whereby the ends of the arms may be moved together,

means for continuously maintaining said arms in a non-rotative position,

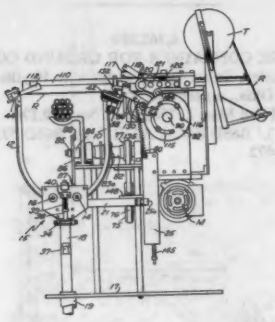
a pair of spaced grippers for gripping tying material, said grippers mounted on the ends of said pair of arms and comprising substantially semi-circular members,

means feeding tying material to said grippers,

means cutting a preselected length of ribbon material,

means causing relative movement of said grippers and said articles,

means rocking said arms to move the grippers together, and



means rotating the grippers about a common axis to twist the material about itself and around the articles.

4,362,097

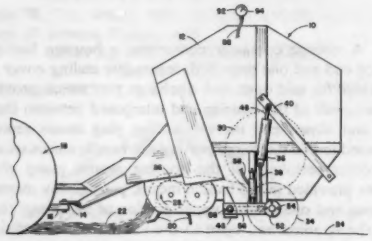
APPARATUS FOR DETERMINING WEIGHT OF CYLINDRICAL HAY BALES

Laurence J. D. Rogers, Rte. 1, Box 230, Checotah, Okla. 74426

Filed Dec. 29, 1980, Ser. No. 221,025

Int. Cl.[3] B30B *15/00*

U.S. Cl. 100—99 5 Claims



1. In combination with a cylindrical bale hay baler, weight indicating apparatus for determining the weight of the bale as the bale accumulates on the baler and comprising lever means pivotally secured directly between the hay baler itself and at least one support wheel thereof with minimum alteration of the existing structure of the hay baler for yieldable supporting the hay baler from said wheel, sensing means secured to the lever means substantially centrally disposed between the opposite ends thereof and operably connected with the hay baler itself for response to vertical fluctuations of the hay baler during a hay baling operation, and weight indicating means operably secured to the sensing means for actuation thereby upon vertical fluctuations of the hay baler to provide a continual indication of the weight of the bale during the baling operation.

4,362,098

ROTARY PRINTING PRESS USING FLEXIBLE PLATES

Walter R. Stelling, Jr., Milwaukee; William A. Cummins, Nashotah, and John F. Beaudoin, Milwaukee, all of Wis., assignors to Faustel, Inc., Butler, Wis.

Filed Aug. 4, 1980, Ser. No. 175,296

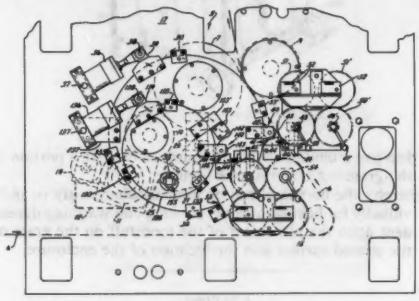
Int. Cl.[3] B41F *5/04, 13/20, 13/28*

U.S. Cl. 101—219 17 Claims

1. In a printing press comprising a frame having opposite spaced apart side frame members and a pair of cylinders between said side frame members, each rotatable in a pair of bearings that respectively support its opposite end portions, one of said cylinders being bodily movable relative to the other to and from an operative position in which said one cylinder is in proximity to the other and has its axis in a predetermined spaced and substantially parallel relationship to the axis of said other cylinder, mounting means whereby the bearings for said one cylinder are supported on said frame for bodily motion of that cylinder to and from said operative position, said mounting means being characterized by:

A. a pair of circular bearing carriers, one for each side frame member, each carrying a bearing for said one cylinder, said bearings being spaced equal distances from the respective axes of said bearing carriers;

B. each of said bearing carriers having its peripheral surface tapered axially in one direction;



C. each side frame member having a hole in which its bearing carrier is rotatably seated and which defines a mating axially tapering surface that is engaged by the peripheral surface on its bearing carrier to define a limit of axial motion of the bearing carrier in said direction, said holes in the side frame members being coaxial;

D. retaining means for each bearing carrier, adjacent to its marginal portion and the marginal portion of its hole in its side frame member, secured to one of said marginal portions and slidably overlying the other to confine the bearing carrier against axial motion away from said limit; and

E. cooperating abutment elements on each bearing carrier and on its side frame member, engageable to define a position of rotation of the bearing carrier in which said one cylinder is in its operative position.

4,362,099

ADJUSTING DEVICE FOR SHEET REVERSING IN A SHEET-FED ROTARY PRESS

Masayuki Iwamoto, Shizuoka, Japan, assignor to Kabushiki Kaisha Shinoharatekkosho, Naganuma, Japan

Filed Apr. 17, 1981, Ser. No. 255,324

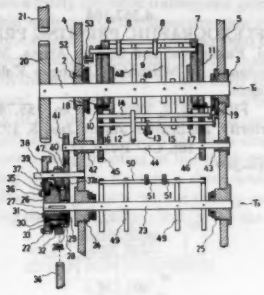
Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3017013

Int. Cl.[3] B41F *21/04, 21/10;* B65H *5/12, 29/06*

U.S. Cl. 101—230 4 Claims

1. An adjusting device for sheet reversing in a sheet-fed rotary press comprising a drive shaft, a reversing cylinder which is driven by the drive shaft and carries a plurality of sheet grippers, a rotary drum carrying a plurality of leading-end grippers, and a rotary assembly carrying a plurality of trailing-end grippers, which is concentric with said drum, wherein the improvement comprises a flange fixed to said drive shaft, a first drive gear fixed to said flange, a second drive gear which is adjustably attached to said flange and has a driving connection with said rotary assembly, a third drive gear which is adjustably attached to said flange and has a

driving connection with said rotary drum, and means for manually rotating said reversing drive cylinder through said first



drive gear, for selectively adjusting the angular position of attachment of the second and third gears to said flange.

4,362,100

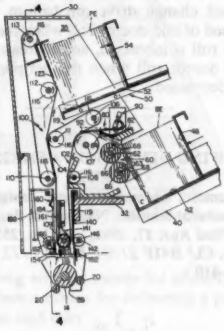
ENVELOPE FEEDER

Edward S. Wu, Fremont, Calif., and Roger R. Soulard, Dracut, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Jul. 11, 1980, Ser. No. 167,465

Int. Cl.³ B41F *13/24*

U.S. Cl. 101—233 **11 Claims**



1. An envelope feeder for a printer having a rotatable platen and cooperating printing means, platen drive means, and platen pinch roll means, said feeder comprising

a blank envelope feeding hopper for supporting a stack of blank envelopes

envelope extracting means for extracting an envelope from said stack of blank envelopes in said blank envelope feeding hopper, said extracting means including

envelope engaging means adapted to contact the last envelope on said stack of blank envelopes to extract said last envelope and

envelope transporting means for transporting said extracted last blank envelope to said printer platen for printing and thereafter transporting said extracted printed envelope away from said printer platen

printing position envelope sensing means for sensing the arrival of an extracted envelope in the proper position for printing, said printing position envelope sensing means being connected and arranged to stop said transporting means for printing of said extracted envelope by said printer, and

said transporting means having drive means responsive to completion of said printing to restart said transporting means.

4,362,101

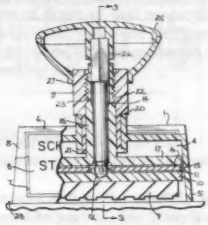
VARIABLE IMPRESSION HAND STAMP

Robert H. Ahrens, Janesville, Wis., assignor to Schwaab, Inc., Milwaukee, Wis.

Filed Jul. 18, 1980, Ser. No. 170,038

Int. Cl.³ B41K *1/38;* B41F *27/00*

U.S. Cl. 101—327 **3 Claims**



1. An ink stamp, comprising a casing having an open bottom bordered by a bottom edge and having a top wall formed with an opening, a printing die to be impregnated with ink disposed within the casing and normally disposed above said bottom edge, said die adapted to print an image on a surface, a die holder secured to the upper surface of the die and disposed within the casing, a base disposed within the case above said die holder, a stem disposed for sliding vertical movement within said opening and the lower end of the stem engaged with the die holder, whereby vertical movement of said stem will raise and lower the die holder and the die, a handle secured to the upper end of the stem, said handle, stem and die holder constituting an integral structure, biasing means for biasing the die holder upwardly into engagement with said base, a barrel rotatably mounted with respect to the casing and bordering said opening, said barrel being fixed against axial movement with respect to said casing, and a sleeve threadedly engaged with the barrel, the inner end of said sleeve being connected to said base, said stem being slidably disposed within said sleeve, whereby a downward force applied to said handle will move the die holder downwardly to bring the die into contact with said surface, rotation of said barrel causing said sleeve to move vertically to thereby vary the vertical position of said base and correspondingly vary the position of said die holder and die with respect to said bottom edge.

4,362,102

SHAFT SEAL FOR DISTRIBUTOR ROLLERS IN INKING UNITS OF PRINTING PRESSES

Janko Despot, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland, Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 218,824, Dec. 22, 1980, abandoned. This application Jan. 22, 1981, Ser. No. 227,427

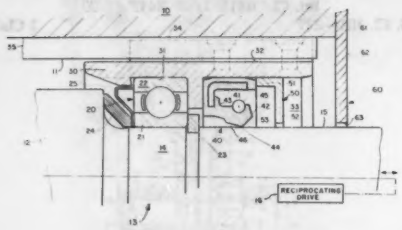
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951652

Int. Cl.³ B41F *31/14;* B41L *27/16*

U.S. Cl. 101—348 **4 Claims**

1. Means for journaling and sealing a reciprocated roller in a printing press comprising, in combination, a reciprocated roller having a shaft, a press frame having an opening through which the shaft extends, an anti-friction bearing adjacent the roller and having an inner race and outer race, means for holding the inner race axially captive on the shaft so that the bearing reciprocates with the shaft, the shaft having a portion projecting outboard beyond the bearing, a supporting sleeve secured to the outer race of the bearing interposed between the bearing and the wall of the opening in the frame and telescoped

over the projecting portion of the shaft to form an annular recess, means for keying the sleeve to the frame to prevent relative rotation of the sleeve in the frame while permitting reciprocation of the sleeve with the shaft, a sealing ring recessed in the telescoping portion of the sleeve, the sealing ring having a collar with an annular lip of impervious resilient material mounted thereon cantilever-fashion, the annular lip



being shaped to form a narrow ring of contact with the projecting portion of the shaft and having a garter spring in encircling relation so that sealing force is applied radially inwardly about the entire ring of contact, the collar of the sealing ring being fixed to the sleeve so that the ring of contact remains axially stationary with respect to the shaft as the shaft undergoes reciprocating movement.

4,362,103

INK PAD ASSEMBLY

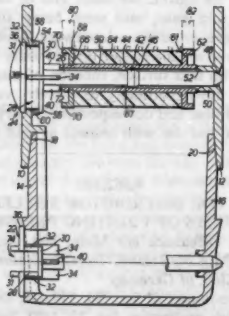
Anthony V. J. Figg, Kirby Cross, and Brian Nicholson, St. Osyth, both of England, assignors to Norcros Investments Limited, Reading, England

Filed Mar. 9, 1981, Ser. No. 241,676

Claims priority, application United Kingdom, Mar. 11, 1980, 8008125

Int. Cl.³ B41F *31/26*

U.S. Cl. 101—348 **8 Claims**



1. An inking pad assembly comprising

an inking pad roller of absorbent material rotatable about its longitudinal axis,

a sleeve mounting the roller,

a spindle supporting the sleeve and roller for free rotation with a clearance over the co-operating lengths of the spindle and the sleeve, and

means operative between the roller and the spindle serving to reduce said clearance and thereby enable limited pivotal motion about axes transverse to said longitudinal axis so that uneven presentation of print facets can be accommodated, said means comprising

a projection on the spindle, and

an internal ring formed within the sleeve and abutting the projection.

4,362,104

FLEXOGRAPHIC PRINTING PRESS

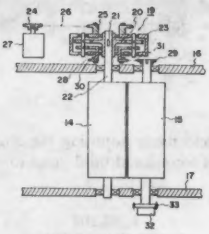
Hiroto Imai, Fukuyama, and Sumito Arima, Mihara, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,784

Claims priority, application Japan, Jun. 5, 1979, 54-70239

Int. Cl.³ B41F *31/00*

U.S. Cl. 101—349 **3 Claims**



1. A flexographic printing press wherein ink stored between an anilox roll and a doctor roll which are in contact with each other and which are rotated in opposite rotational directions is supplied via said anilox roll to a form plate attached to a printing cylinder, to thereby carry out a printing operation, comprising a speed change drive mechanism for reducing the peripheral speed of said doctor roll when the peripheral speed of said anilox roll is increased, and increasing the peripheral speed of said doctor roll when the peripheral speed of said anilox roll is decreased.

4,362,105

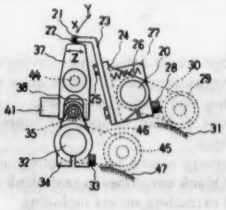
SHEET DRAWING DEVICE FOR A SHEET-FED ROTARY PRESS

Masayuki Iwamoto, Shizuoka, Japan, assignor to Kabushiki Kaisha Shinoharatekkosho, Naganuma, Japan

Filed Apr. 17, 1981, Ser. No. 255,155

Int. Cl.³ B41F *21/04*; B65H *5/12, 29/06*

U.S. Cl. 101—410 **1 Claim**



1. A sheet drawing device for a sheet-fed rotary press comprising a main shaft, a pair of primary segment arms secured in spaced relation on the main shaft, a plurality of front-end grippers secured to a first gripper shaft which is pivotally mounted in said segment arms, means for controlling pivoting of said gripper shaft to operate said grippers, a pair of adjusting gears adjustably mounted on the main shaft, and a plurality of secondary segment arms rotatably mounted on the main shaft, wherein the improvement comprises a bearing block adjustably mounted on each of the secondary segment arms, which is pivotably mounted for adjustment about an axis perpendicular to the bearing axis of the bearing block, a sheet-drawing roll journaled in each bearing block, a plurality of fixtures secured

to a second gripper shaft which is pivotably mounted in the adjusting gears, each fixture being resiliently connected to a guide which is rotatably mounted on the second gripper shaft and which carries a freely rotatable trailing-end gripping roller that is engageable with one of the sheet-drawing rolls, means for controlling pivoting of the second gripper shaft to bring the trailing-end gripping rollers into and out of sheet gripping engagement with the sheet-drawing rolls, a third gripper shaft pivotably mounted in the adjusting gears, on which are secured a plurality of driving arms each of which carries a driving roller engaged in a recess in one of the sheet-drawing rolls, and means for controlling pivoting of the third gripper shaft, said means acting to take up slack in a sheet which is being gripped by the front-end grippers and the trailing-end gripping rollers, by driving the sheet-drawing rolls in the sheet-drawing direction.

4,362,106

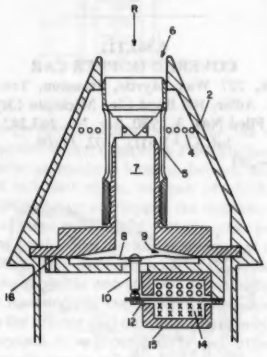
FLOW DEFLECTOR FOR AIR DRIVEN POWER SUPPLY

Carl J. Campagnuolo, Potomac, and Henry C. Lee, Annapolis, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 21, 1980, Ser. No. 142,548

Int. Cl.³ F42C *11/00*

U.S. Cl. 102—207 **9 Claims**



1. In a fuze having air inlet means for allowing air flow to enter the fuze deflector means for deflecting a portion of said air flow away from said inlet.

4,362,107

PRACTICE PROJECTILE

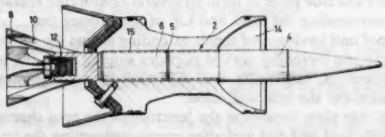
Rudolf Romer, Kaarst; Christian Jaeneke, and Günter Sikorski, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,758

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844870

Int. Cl.³ F42B *13/16*

U.S. Cl. 102—520 **4 Claims**



1. A tail-stabilized subcaliber non-detonating projectile for target practice having a sabot operatively mounted thereon, adapted to remain intact until impact practice, comprising in combination,

(a) a casing which corresponds in weight and shape to a normal subcaliber projectile, said casing having at least one preset breaking line;

(b) said sabot being mounted over said preset breaking line;

(c) said preset breaking line being disposed in the zone of minimum firing loading upon the projectile casing;

(d) said sabot being mounted on the projectile by means of an interfitting splines and grooves system, said preset breaking line being disposed in front of the rearmost extent of said interfitting splines and grooves system relative to the direction of flight of said projectile by a distance corresponding to about twice the diameter of the projectile, whereby upon impact the projectile disintegrates at said preset breaking line.

4,362,108

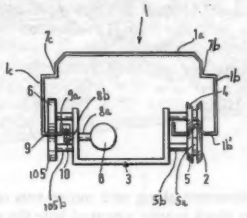
CONVEYOR SYSTEM

Erwin Jenkner, Lindenstrasse 13, D-7261 Gechingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 109,920, Jan. 7, 1980, abandoned. This application Feb. 28, 1980, Ser. No. 125,358

Int. Cl.³ B61B *3/00*; E01B *5/02*

U.S. Cl. 104—94 **16 Claims**



1. In a conveyor system, the combination of a straight, elongated track having a substantially U-shaped or C-shaped cross-sectional outline and consisting at least in part of sheet metal, said track including a substantially V-shaped portion extending lengthwise of said track and a second portion spaced apart from and parallel to said V-shaped portion, and each of said portions having a first side and a second side, said track further including reinforcing means extending in parallelism with said V-shaped portion, and said track also including a pair of spaced-apart legs and a web between said legs, one of said legs comprising a ledge extending toward the other of said legs and including said V-shaped portion; and a vehicle including a first follower unit which engages said V-shaped portion and has a configuration at least partly complementary to the same so as to confine said vehcile to movement lengthwise of said track, said vehicle further including a second follower unit which engages said second portion of said track, and each of said follower units comprising a roller and a counterroller, said rollers engaging the first sides of the respective portions of said track while said counterrollers bear against the second sides thereof to thereby urge said rollers against the corresponding first sides.

4,362,109

RAILWAY VEHICLE TRUCKS

Romano Panagin, Turin, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Apr. 22, 1980, Ser. No. 142,805

Claims priority, application Italy, May 24, 1979, 68110 A/79

Int. Cl.³ B61F *3/08, 5/16, 5/30, 5/38*

U.S. Cl. 105—182 R **14 Claims**

1. A railway truck, said truck having a longitudinal axis extending in the direction of movement of the vehicle,

a support structure comprising a horizontal plate having central means defining a rectangular aperture having a major axis which is directed transversely to the longitudinal axis of the truck and a minor axis which is parallel to the longitudinal axis of the truck, said support structure further comprising two tubular transverse supports rigid with opposite ends of the plate in the direction of the longitudinal axis of the truck,

two shafts rotatably mounted in said tubular supports,

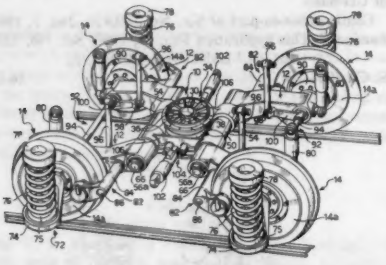
bushes of elastomeric material interposed between said shafts and said tubular supports,

a respective pair of arms carried by each shaft with each arm carrying a transversely projecting wheel axle,

a respective wheel mounted on each said wheel axle,

a helical suspension spring and an hydraulic shock absorber associated with each arm and extending upwards therefrom,

rectangular sliding block means mounted in said rectangular aperture of the support structure for substantial sliding movement along said major axis of the aperture and limited displacement along said minor axis of the aperture, the sliding block having a central hole the axis of which is vertical,



an upper plate element adapted to be connected to a vehicle body,

a truck pivot pin carried by said upper plate element and projecting downwardly therefrom, the pivot pin extending through said hole in the sliding block and terminating below said horizontal plate of the support structure,

a lower plate element fixed to the lower end of said pivot pin,

a first elastomeric-material annular element clamped between said upper plate element and the upper surface of said horizontal plate, and

a second elastomeric-material annular element clamped between the lower surface of said horizontal plate and said lower plate element, each of the annular elements of elastomeric material having a rigidity about the longitudinal axis of the truck which is less than the rigidity about the transverse axis of the truck.

4,362,110

INTERCONNECTED RAILWAY VEHICLE TRUCKS

Johann K. Pfister, Dietlikon, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

Filed Jul. 7, 1980, Ser. No. 166,097

Claims priority, application Switzerland, Jul. 6, 1979, 6344/79

Int. Cl.³ B61F *3/08, 5/02, 5/38, 5/52*

U.S. Cl. 105—176 **8 Claims**

1. A rail vehicle comprising

a vehicle body;

a pair of trucks rotationally and transversely supporting said body thereon; and

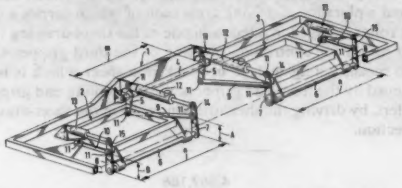
a cross-coupling connecting said trucks together, said cross-coupling including

a torsion bar mounted on said body and extending longitudinally of said vehicle body,

a pair of torsionally stiff levers, each said lever being disposed at a respective end of said torsion bar,

a pair of shafts, each said shaft being mounted on a respective truck in parallel to said torsion bar,

two pairs of torsionally stiff arms, each said pair of arms being disposed on the respective ends of each said shaft,



a first pair of rods, each said rod being hinged to and between an innermost arm of said pair of arms on a respective truck and one of said levers on said torsion bar, and

a second pair of rods, each said rod of said second pair of rods being articulated to and between an outermost arm of said pair of arms on a respective truck and said vehicle body.

4,362,111

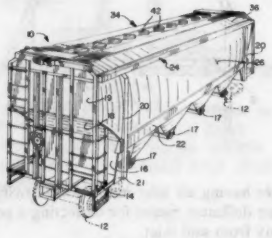
COVERED HOPPER CAR

Marvin Stark, 727 Wax Myrtle, Houston, Tex. 77079, and Franklin P. Adler, 105 Boyd Cir., Michigan City, Ind. 46360

Filed Nov. 3, 1980, Ser. No. 203,242

Int. Cl.³ B61D *7/02, 17/08*

U.S. Cl. 105—247 **10 Claims**



1. A railway hopper car adapted to carry lading which is loaded through hatch openings at the top of the car and discharged at the bottom of the car through discharge openings, the improvement comprising:

spaced side wall units extending the length of the hopper car and including a side sill connected to bolsters at each end thereof and a side plate;

said side wall units comprising side sheets having an arcuate shape;

bolster posts extending upwardly from the bolster connection with the side sill having means connected to the side sill and side plate to form structural reinforcing rectangles surrounding the sides and top of the hopper car;

a roof unit having roof sheets extending across the top of the car and including curved portions sloping from the hatch openings, outwardly and downwardly to side margins adjacent the side wall units;

said side plate located at the juncture of the roof sheets and side wall unit and including means connecting the curved portions with the side sheets;

said side plate comprising a longitudinally extending beam member with a first portion abutting and attached to the

top margin of the side sheets and a side extending outwardly from the roof sheets;

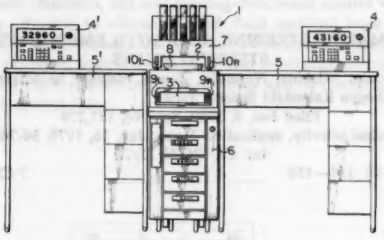
said side plate also including a second portion having means connected to the side sheets and with said first portion forming a hollow beam on the outside of the hopper car and extending to reinforce the upper portion of the side wall units.

4,362,112

DISCHARGE SIDE INDICATOR DEVICE FOR CASH DISCHARGE APPARATUS

Shinya Uchida, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 40,965, May 21, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,778
Claims priority, application Japan, May 23, 1978, 53/61817
Int. Cl.³ E05G *7/00*
U.S. Cl. 109—19 **2 Claims**



1. A discharge side indicator device for use with a cash discharge apparatus which comprises a bill discharge machine and a coin discharge machine located thereon, comprising;

two pairs of indicator plates, one pair of which is disposed on the bill discharge machine at the opposite sides of the money discharge exit thereof, and the other pair of which is disposed on the coin discharge machine at the opposite sides of the money discharge exits thereof, said indicator plates being movable into and out of the body of said bill discharge machine and coin discharge machine,

drive means for driving said indicator plates only at one side, when energized, to be protruded forward from the sides of said money discharge exits, and

control means for controlling the energization of said drive means, whereby an indication is given that it is permissible to take cash out from only the side of said money discharge exits opposite to the side on which said indicator plates are protruded.

4,362,113

MECHANISM GENERATING HELICAL/ELLIPTICAL MOTION

Thomas Bock, Schaumburg; Chandrakant Bhatia, Buffalo Grove, and George M. Toman, Chicago, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

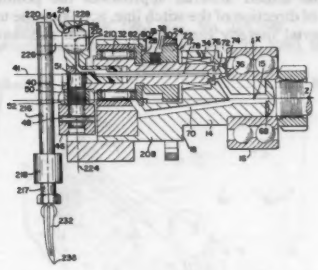
Filed May 9, 1978, Ser. No. 904,207
Int. Cl.³ D05B *1/10, 57/02, 69/02*
U.S. Cl. 112—199 **12 Claims**

1. A sewing machine having a series of elements adapted to form a stitch, one of said elements comprising:

work performing means;

Cardan gear means having an output which has a center-point means arranged relative to the Cardan gear means such that it generally sweeps out an ellipse having a major axis; and

lever means having said work performing means arranged for movement therewith, said lever means being operatively connected to said Cardan gear means output and mounted for reciprocal and oscillatable movement along and about its longitudinal axis, said longitudinal axis being skewed with respect to the major axis of said ellipse such



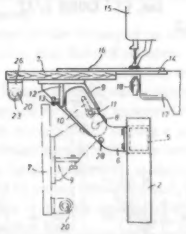
that said work performing means is moved in an elliptical/helical like path.

4,362,114

TABLE TOP EMBROIDERING MACHINE HAVING A PLURALITY OF EMBROIDERING UNITS AND TO AN ADJUSTABLE TABLE TOP THEREFOR

Kurt Bolldorf, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,898
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 7926754[U]
Int. Cl.³ D05C *3/02*; A47B *29/00*
U.S. Cl. 112—217.2 **8 Claims**



1. A table top embroidering machine having a plurality of embroidering units with stitch plates arranged in a plane on an associated embroidering frame, comprising a step bearing adapted to be secured in position adjacent the frame, a bearing strap pivotally mounted on said step bearing for rotation about a horizontal axis, the table top carried on said bearing strap and being pivotal with said bearing strap between a horizontal position aligned adjacent the plane of the stitch plates to a substantially vertical position below the stitch plates.

4,362,115

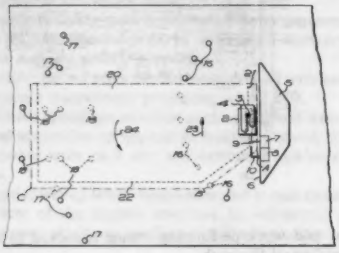
METHOD OF AND APPARATUS FOR TOP STITCHING

John A. Rose, Knaresborough, and Keith Dyer, Leeds, both of England, assignors to AMF Incorporated, White Plains, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,396
Claims priority, application United Kingdom, Sep. 14, 1979, 7931892
Int. Cl.³ D05B *97/00, 21/00*
U.S. Cl. 112—262.3 **5 Claims**

1. A method for the production in a sheet material of a line of machine stitching having a change of direction, comprising the steps of continuously sensing the position of the material and controlling the production of the line of stitching thereby,

moving the material through a sewing machine at a predetermined rate to produce a first portion of the stitch line, reducing the rate of movement of the material through the machine when the sensed material approaches the position for the change of direction of the stitch line, acting on the underside of the material thereby turning the material substantially in its



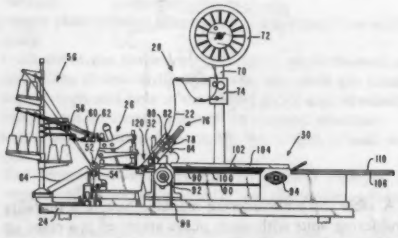
own plane and simultaneously reducing the friction of the turning material until it is sensed to have reached the change of direction of the stitch line, and increasing the rate of movement of the material through the machine to the original rate of movement to produce a second portion of the stitch line along the changed direction.

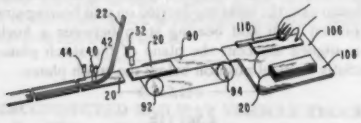
4,362,116

METHOD AND SEMI-AUTOMATIC APPARATUS FOR SEWING FLYPIECES TO SLIDE FASTENER CHAIN

Sisir K. Sen Gupta, and Wayne A. Becker, both of Meadville, Pa., assignors to Talon, Inc., Meadville, Pa.

Filed Dec. 10, 1980, Ser. No. 214,925
Int. Cl.³ D05B *3/12*
U.S. Cl. 112—265.2 **12 Claims**





1. A method of sewing flypieces onto a continuous slide fastener chain, comprising the steps of

guiding a continuous slide fastener chain to a sewing station defined by a sewing machine;

sequentially feeding flypieces along a feed path to the sewing station by means of a conveyor;

sensing the presence and absence of a flypiece at a predetermined point in the feed path spaced in front of the sewing station;

operating the sewing machine in response to the sensing of the presence of a flypiece at the predetermined point;

said operating including advancing the flypieces and slide fastener chain through the sewing station, and sewing the flypieces to the slide fastener chain during the advancing;

terminating operation of the sewing machine in response to the sensing of the absence of a flypiece at the predetermined point;

said operating and said terminating each including delaying the operating and the terminating, respectively, of the sewing machine for selected durations after first sensing the presence and absence, respectively, of a flypiece at a predetermined point;

said advancing of the flypieces and the slide fastener chain through the sewing station being performed at a first linear feed rate; and

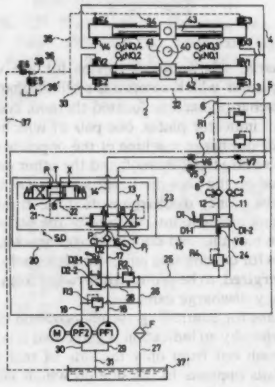
said feeding of the flypieces to the sewing station by the conveyor being performed at a second linear feed rate which is less than the first linear feed rate whereby a predetermined uniform spacing is produced between flypieces sewn to the slide fastener chain.

4,362,117

MARINE STEERING GEAR WITH EMERGENCY STEERING MEANS

Haruhiko Mishina, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jun. 6, 1980, Ser. No. 157,276
Claims priority, application Japan, Jun. 16, 1979, 54-76076
Int. Cl.³ B63H *25/22*
U.S. Cl. 114—150 **7 Claims**



1. An improved marine emergency steering system for controlling a fluid operated marine steering device, the steering device being of the type having a hydraulic steering engine and an actuator for actuating the steering engine, the actuator having a plurality of pressure chambers, and emergency steering means of the type having a hydraulic steering system for passing a hydraulic fluid to the plurality of pressure chambers, the improvement comprising a delivery pump, discharge line means for passing the hydraulic fluid from said delivery pump to the pressure chambers, a check valve mounted in said discharge line means at a location downstream of said delivery pump for checking back flow of the hydraulic fluid in a direction toward said delivery pump, a first relief valve mounted in said discharge line means, said first relief valve being operable to relieve hydraulic fluid from the discharge line means, a steering-directional control valve mounted in said discharge line means intermediate said check valve and the pressure chambers, an oil-charge-directional control valve mounted in said discharge line means intermediate said steering-directional control valve and the pressure chambers, said oil-charge-directional control valve having two working positions and being

operable to shift between a first one of said working positions in which fluid received from said delivery pump is passed to the pressure chambers and a second one of said working positions in which fluid received from said delivery pump is not passed to the pressure chambers, oil-charge check valves mounted intermediate said oil-charge-directional control valve and the pressure chambers for checking back flow of the hydraulic fluid in a direction toward said oil-charge-directional control valve, a second relief valve mounted in said discharge line means upstream of said oil-charge-directional control valve to relieve hydraulic fluid from said discharge line means at a set pressure corresponding to a desired charge pressure to forcibly reduce air volume in the pressure chambers, said discharge line means downstream of said steering-directional control valve comprising a first separate line including said oil-charge-directional control valve and a second separate line excluding said oil-charge directional control valve, both of said first and second separate lines being connected to the pressure chambers, and said steering-directional control valve being operable to alternately pass fluid received from said delivery pump through said discharge line means to the pressure chambers indirectly through said oil-charge-directional control valve and directly by by-passing said oil-charge-directional control valve.

4,362,118

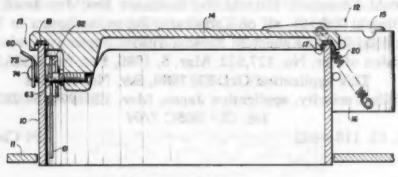
SELF-LATCHING HATCH COVER FOR BARGES

Robert C. Koch, Jr., Louisville, Ky., and Horst R. Hickmann, Cincinnati, Ohio, assignors to American Commercial Barge Line Co., Jeffersonville, Ind.

Filed Mar. 16, 1981, Ser. No. 243,742

Int. Cl.³ B63B *19/14*

U.S. Cl. 114—201 R **9 Claims**



1. A water tight hatch cover and coaming assembly on a barge or like vessel, comprising in combination, a manually operable cover adapted to selectively close a hatchway defined in part by the coaming assembly to keep water out and to open it for access to a cargo area, hinging means hinging the cover on the coaming assembly to move from open to closed hatchway positions thereon including a projection on said cover extending beyond the coaming and a substantially U-shaped open topped mating housing member extending from the coaming to surround the extension, a detent slot defined in said extension disposable in said housing member over the movement span of the cover, a pin extending through the housing member to engage the slot and seat in different detent positions therein for open and closed cover positions, means camming the projection against the housing member as the cover moves from an open to a closed position to move the cover slot from one detent position to another, and a quick release self-latching spring loaded lock for retaining said cover in a water tight closed position thereby permitting a deck hand to quickly open and close the hatch cover.

4,362,119

ANCHOR HOIST

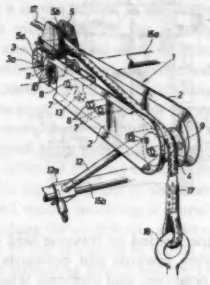
Bengt Thimander, Vallingbyvagen 152, 162 21 Vallingby, Sweden

Filed Feb. 19, 1981, Ser. No. 235,790

Claims priority, application Sweden, Feb. 21, 1980, 8001382

Int. Cl.³ B63B *21/22*

U.S. Cl. 114—210 **5 Claims**



1. An anchor hoist comprising:

a main body comprising two parallel side wall members, said main body being pivotally mounted on a pivot-forming boat fixture;

an inner sheave and an outer sheave for receiving an anchor line, said inner and outer rotatable sheave being rotatably mounted between said two side wall members of said main body, a distance between a pivoting axis of said main body upon said pivot-forming boat fixture and a rotary axis of said outer sheave being at least three times the diameter of said inner sheave;

a pivotable support device arranged on said main body in the region of an outer end thereof adjacent said outer sheave, said pivotable support device having means for engaging a further boat fixture in an in-use position of said hoist; and

a line-holding device rotatably mounted on an inner end of said main body member and having a rotary axis coinciding with said rotary axis of said main body member on said pivot-forming boat structure, said line-holding device being arranged to swing inwardly and downwardly when said anchor line is jerked inwardly of the boat so as to release said anchor line.

4,362,120

MOBILE PLATFORM OR PLATFORM TO BE USED AS FLOATING WORKSHOP

Cornelis Dekkers, Rotterdam, Netherlands, assignor to Gusto Engineering B.V., Schiedam, Netherlands

Filed Aug. 25, 1980, Ser. No. 181,242

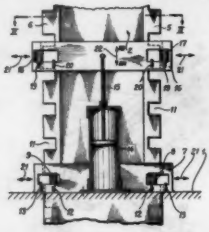
Claims priority, application Netherlands, Aug. 24, 1979, 7906403

Int. Cl.³ B63B *35/44*

U.S. Cl. 114—265 **6 Claims**

1. In a mobile platform comprising a buoyant pontoon and at least three legs movable in vertical direction relative to said pontoon, said legs being connected to said pontoon by means of a lifting-locking mechanism provided in the proximity of each leg, with which mechanism said leg can be secured and moved relative to said pontoon, said mechanism comprising at least two horizontally movable locking means spaced one above the other, said locking means cooperating with lock recesses of the leg and fitting therein with clearance in vertical sense and one locking means being disposed in a framework, said framework being movable with respect to said pontoon by means of a jack system, said locking means being adapted to act in turn on said leg, and in which each lifting-locking mechanism is provided with a safety means comprising at least one

element appertaining to each locking means, said elements recording the final positions of the locking means when said means have completed their movement, and a control circuit for the jack system; the improvement comprising a time relay in the control circuit of the jack system, said time relay interrupting the circuit when, after a previously set time which is



shorter than the time needed to traverse said clearance, the locking means moving inwards and outwards have not yet reached their final positions, said elements which record said final positions also controlling said circuit in such a manner that they interrupt said circuit when all locking means have reached their final positions, and in which also the time relay is switched off.

4,362,121

PRESSURE INDICATOR FOR PNEUMATIC TIRES

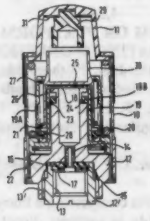
Philip H. Pegram, Leamington Spa, England, assignor to Dunlop Limited, London, England

Filed Aug. 8, 1980, Ser. No. 176,685

Claims priority, application United Kingdom, Aug. 15, 1979, 792839

Int. Cl.³ B60C *23/04*

U.S. Cl. 116—34 R **10 Claims**



1. A deflation warning device for a pneumatic tire comprising a housing adapted to be placed in a communication with the air chamber of a pneumatic tire; a piston reciprocable in the housing, the piston being biased in one direction and moveable against said bias by tire air pressure; a brightly colored visual indicator enclosed within the housing which when is visible therein through a transparent portion of the housing when the piston is in a first position but is masked from view when the piston is in a second position and an annular, opaque mask moveable with the piston to move into or out of said housing portion to mask or unmask the colored element.

4,362,122

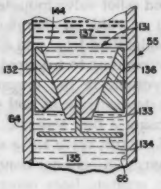
FLUID DISPENSING SYSTEM

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 4, 1981, Ser. No. 260,361

Int. Cl.³ B05B *12/00*; B05C *5/02*

U.S. Cl. 118—600 **10 Claims**



1. Coating apparatus, comprising, in combination: a cartridge battery comprising a plurality of fluid containers each adapted to contain, in superposed layers, a quantity of fluid coating composition and a quantity of drive fluid having a density less than the density of the coating composition and means for supporting said containers in a vertically oriented array; a fluid drive system comprising a set of positive displacement pumps, one for each container, each adapted to be connected to a different one of said containers to supply drive fluid to said containers and dispense coating fluid from said containers at rates equal to the rates of flow of drive fluid provided by said pumps; a coating head for applying coating compositions to a web; and means for connecting said containers to said coating head to deliver coating compositions to said coating head simultaneously at rates equal to the rates of flow of drive fluid supplied by said pumps.

4,362,123

APPARATUS FOR MANUFACTURING FLUORESCENT LAMPS

Hitoshi Yamazaki; Hiroshi Ito; Sadaharu Doi; Jun Imai, and Hiroshi Takada, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 127,522, Mar. 5, 1980, Pat. No. 4,308,297.

This application Oct. 21, 1980, Ser. No. 199,221

Claims priority, application Japan, Mar. 12, 1979, 54-28366

Int. Cl.³ B05C *7/04*

U.S. Cl. 118—642 **34 Claims**

1. An apparatus for manufacturing a fluorescent lamp comprising:

a coating unit including:

an upper tank;

a coating nozzle disposed on said upper tank for causing a phosphor suspension to flow down on the inner surface

of a glass bulb therethrough to form a phosphor layer thereon;

a lower tank for recovering and accommodating a surplus of said phosphor suspension flowing down from said upper tank;

a suspension supply pipe for supplying said phosphor suspension to said upper tank from said lower tank therethrough;

and a filter unit for removing bubbles in said phosphor suspension and disposed within at least one of said upper and lower tanks;

and a baking unit disposed adjacent said coating unit for baking said phosphor layer on said glass bulb and including:

a pair of guide rails for guiding said glass bulb coating with said phosphor layer;

a pair of endless conveyors juxtaposed with said guide rails;

a plurality of guide tips affixed at predetermined equal intervals on each of said endless conveyors to project above its mating guide rail;

and a heating furnace for heating and baking said phosphor layer on said inner surface of said glass bulb while said glass is transported along said guide rails by means of said endless conveyors and an associated one of said plurality guide tips;

said coating nozzle including a stationary injection port disposed at an extremity of said coating nozzle so as to inject the phosphor suspension through a flow passageway disposed within said coating nozzle to reach the extremity thereof, an opening and closing valve disposed within said flow passageway to open and close said flow passageway through vertical movement thereof, and a liquid reservoir portion disposed between said opening and closing valve and said stationary injection port and arranged so as to be always filled with the phosphor suspension.

4,362,124

ANALOG PAINT OUTPUT CONTROL

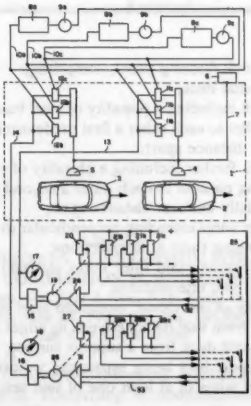
Gunther Fleig, Hanau, Fed. Rep. of Germany, assignor to Ransburg Corporation, Indianapolis, Ind.

Continuation of Ser. No. 35,105, May 1, 1979, abandoned. This application May 8, 1981, Ser. No. 261,930

Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819302

Int. Cl.³ B05C *5/00*

U.S. Cl. 118—698 **10 Claims**



1. A control system for the coating of articles in a production operation in which the articles are conveyed sequentially past an atomizing device for atomizing coating material, a plurality of different coating material sources, and means for coupling the atomizing device to the different coating material sources, the control system including a plurality of coating material pressure regulators, one for each different coating material to be dispensed from the atomizing device, the means for coupling the atomizing device to the different coating material sources including the coating material pressure regulator, the coating material pressure regulator including a control input, an analog coating material pressure control means for generating a signal related to the desired coating material pressure to be maintained by the coating material pressure regulator, the analog coating material pressure control means including a control input and a controlled output, means for coupling the control input of the coating material pressure regulator to the controlled output of the analog coating material pressure control means, a plurality of signal sources, each providing a signal corresponding to one of a plurality of selected desired different coating material pressures, and means for coupling the signal sources to the analog coating material pressure control means including a plurality of switches and means for switching the switches in a selected desired sequence corresponding to the sequence in which the articles are conveyed past the atomizing device and the characteristics of the different coating materials and the articles themselves to insure that each article is coating substantially uniformly with the proper amount of a selected coating material.

4,362,125

QUARTZ OSCILLATOR MEASURING HEAD

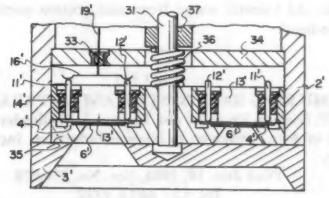
Walter Schadler, Triesen, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Jul. 16, 1981, Ser. No. 283,885

Claims priority, application Switzerland, Jul. 21, 1980, 5557/80

Int. Cl.³ B05C *11/00*

U.S. Cl. 118—712 **7 Claims**

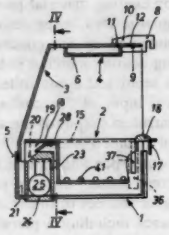


1. In an oscillator crystal measuring head for vacuum coating apparatus, for determining the mass of substance which is being deposited on an oscillator crystal during a deposition of thin layers by a vapor stream, and by which the frequency of the crystal is changed, comprising a housing, a support accommodated in said housing for at least one oscillator crystal, at least one electrical conductor connected to a mechanism for clamping the oscillator crystal and a screen rigidly connected to the housing and provided with a window exposing one side of the oscillator crystal to the vapor stream to be measured during the measuring operation, the improvement comprising, said support being mounted in said housing for performing a rotary motion and provided with retaining mechanisms for a plurality of oscillator crystals, each individual oscillator crystals being associated with further screens which are movable along therewith and provided with apertures to define surface areas of each crystal to be coated with at least the screen of the oscillator crystal just occupying its measuring position brought into a heat conducting pressure contact with the screen which is connected to the housing.

4,362,126
BIRD SHOWER

Herbert Ellerstorfer, Bismarckstrasse 133, 8500 Nürnberg, and Leopold Anetseder, Arnoldstrasse 13, 8000 München, both of Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,158
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—1 29 Claims



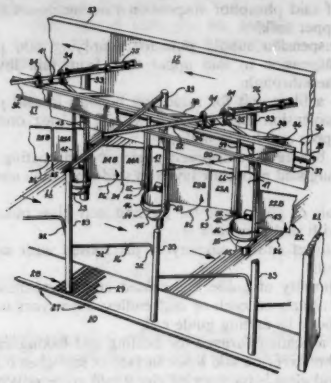
1. A bird-shower bath comprising a shower-head positioned over a bottom portion, said bottom portion serving as a water reservoir and being substantially open at its top to receive water from said shower-head; a movable platform adaptable to accommodate a bird and positioned in said bottom portion; a biasing means to maintain said movable platform in a rest position; an electrically operated pump positioned to receive and transfer water from said bottom portion to said shower-head; a conduit means for transferring the pumped water, connected at one end to said pump and at the other end to said shower-head; a switching means operatively connected to said pump, said switching means comprising a combination of a reed relay mounted on said bottom portion and a magnet mounted on said movable platform and being actuated by movement of said movable platform from its rest position whereby the force exerted by a bird contacting said movable platform actuates said switching means causing said pump to operate and transfer water from said bottom portion to said shower-head.

4,362,127
MILKING BARN SYSTEM AND APPARATUS

Floyd P. Nielsen, Phoenix, and Thomas A. Wallender, Chandler, both of Ariz., assignors to Nielsen Industries, Inc., Phoenix, Ariz.

Filed Jun. 18, 1981, Ser. No. 274,978
Int. Cl.[3] A01K *1/12*
U.S. Cl. 119—14.03 15 Claims

1. In a herringbone stall at least one pair of adjacent cow stations comprising a zig-zag stationary tail assembly for receiving the rear and rear side portions of at least two adjacent cows, a reciprocatable framework mounted adjacent the head portions of adjacent cows, adjacent feed bowl frameworks being suspended from said reciprocatable framework, each of said feed bowl frameworks cooperating with a respective one of said adjacent rear portions to form an individual cow stall, the space between said feed bowl frameworks and said rear and side portions defining an ingress aisle for cows, first and second gate sections mounted on each of said feed bowl frameworks, said first gate sections being pivotally mounted for clockwise rotation outwardly on one side of said feed bowl frameworks and said second gate sections being pivotally mounted for counterclockwise rotation outwardly on the opposite side of said feed bowl frameworks, the first gate section mounted on one feed bowl framework and the second gate section mounted on the adjacent feed bowl framework forming the gate for one cow, the line of said first and second gate sections for each stall has an acute angularity relative to the line of said cow stations, an egress aisle on the side of said feed bowl frameworks opposite to said ingress aisle, and means on said framework for

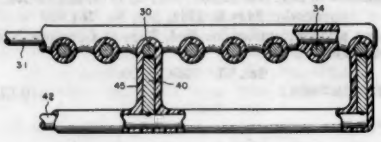


actuating all of said first and second gate sections simultaneously.

4,362,128
LIVESTOCK FLOORING

Bernard L. Downey, Oak Brook, Ill., assignor to B. L. Downey Company, Inc., Cicero, Ill.

Filed Jun. 26, 1981, Ser. No. 277,896
Int. Cl.[3] A01K *1/01*
U.S. Cl. 119—28 7 Claims



1. A livestock flooring panel, comprising:

a. a horizontal deck;

b. said deck including a plurality of steel base wires extending parallel to each other a first predetermined substantial uniform distance apart;

c. said deck further including a plurality of steel filler wires extending parallel to each other a second predetermined substantially uniform distance apart;

d. said filler wires extending perpendicular to said base wires and engaging them at intersections;

e. means fastening said filler wires and said base wires together at said intersections;

f. a plurality of individual, elongated steel support bars depending from said deck between its edges and adapted to support said deck from a support surface;

g. said support bars being separately welded to certain of said steel wires in at least one of said sets of steel wires; and

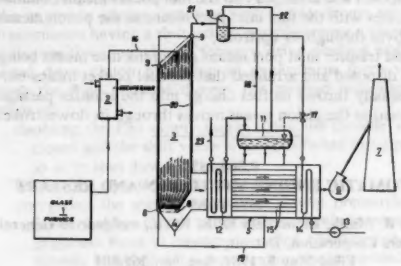
h. a resilient plastic coating material substantially uniformly covering the base wires, filler wires and support bars after they are welded together.

4,362,129

STEAM GENERATOR USING WASTE HEAT FROM GLASS FURNACE

Jozsef Banfi; Zoltan Lontay; Zoltan Vadas, and Bela Wenzel, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Filed Oct. 30, 1979, Ser. No. 89,388
Claims priority, application Hungary, Oct. 31, 1978, EE 2595
Int. Cl.³ F22D 1/00
U.S. Cl. 122—7 R 6 Claims



1. A steam generator utilizing waste heat from a source of flue gases, provided with a recuperator traversed by said flue gases at an elevated level above ground, comprising:

a cooling column with an upper inlet connected to said recuperator for receiving hot flue gases therefrom, said column being provided with a bank of generally vertical pipes abstracting heat from said flue gases and being further provided with a lower outlet for said flue gases;

a convective boiler disposed at ground level and provided with an entrance end connected to said outlet and with an exit end communicating with a chimney;

a supply of cooling water; and

conduit means including said bank of pipes for consecutively carrying said cooling water from said supply through said boiler and said column in counterflow to said flue gases and for passing resulting steam to a load.

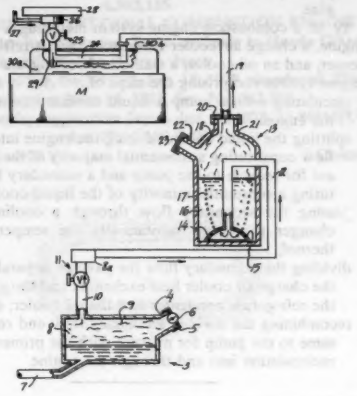
4,362,130

SUPPLEMENTARY COMPOSITION FOR AND A METHOD OF COMBUSTION-BURNING OF GASOLINE

Antonio Robinson, 644 Sound Ave., New York, N.Y. 10473

Filed May 26, 1981, Ser. No. 266,995
Int. Cl.³ F02B 47/04
U.S. Cl. 123—1 A 13 Claims

1. A method of combustion-burning gasoline in an internal combustion engine, comprising in combination; admix air, gasoline vapor, and fine vaporous droplets of a water solution of a metal hydroxide that is at least slightly soluble in water at ambient temperatures; sufficiently to form a first mixture in vaporous form; thereafter heating said first mixture; thereafter admixing said heated first mixture with a gasoline-air fuel mixture sufficiently to form a form a final fuel mixture in a



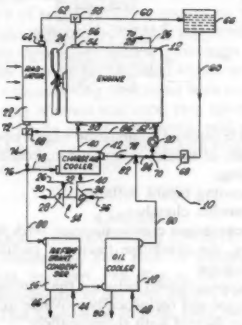
heated state; and combustion-burning the final fuel mixture within a combustion fuel chamber.

4,362,131

ENGINE COOLING SYSTEM

John L. Mason, and Robert C. Emmerling, both of Los Angeles, Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 10, 1980, Ser. No. 215,206
Int. Cl.³ F01P 3/12, 7/14
U.S. Cl. 123—41.1 31 Claims



1. In a combustion engine system including a combustion engine, a charge air cooler heat exchanger, a refrigerant condenser, and an oil cooler, an engine cooling system, comprising:

a circulating pump for circulating a liquid coolant into and through the engine;

splitter means for splitting the liquid coolant exiting the engine into a primary flow constituting a substantial majority of the liquid coolant for recycle to said pump and a secondary flow constituting a substantial minority of the liquid coolant;

a cooling heat exchanger coupled to said splitter means for passage of said secondary flow to reduce substantially the temperature level thereof;

means for dividing said secondary flow exiting said cooling heat exchanger for flow in parallel through the charge air cooler heat exchanger and through in series the refrigerant condenser and the oil cooler; and

means for recombining said divided secondary flow and for returning the same to said pump for mixture with said primary flow and recirculation into and through the engine.

19. In a combustion engine system including a combustion engine, a charge air cooler heat exchanger, a refrigerant condenser, and an oil cooler, a method of cooling the combustion engine system comprising the steps of:

circulating with a pump a liquid coolant into and through the engine;

splitting the liquid coolant exiting the engine into a primary flow constituting a substantial majority of the liquid coolant for recycle to the pump and a secondary flow constituting a substantial minority of the liquid coolant;

passing the secondary flow through a cooling heat exchanger to reduce substantially the temperature level thereof;

dividing the secondary flow for passage in parallel through the charge air cooler heat exchanger and through in series the refrigerant condenser and the oil cooler; and

recombining the divided secondary flow and returning the same to the pump for mixture with the primary flow and recirculation into and through the engine.

4,362,132

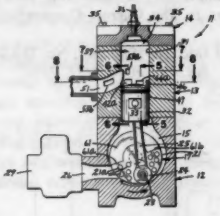
TWO-CYCLE ENGINE

Clayton L. Neuman, 11440 Olive St., Coon Rapids, Minn. 55433

Filed Jan. 12, 1981, Ser. No. 224,256

Int. Cl.³ F02B *33/04*

U.S. Cl. 123—73 D **22 Claims**



1. A two-cycle internal combustion engine operable through combined cycles of intake, compression, combustion and exhaust, comprising:

(a) engine housing means defining

(i) a combustion chamber;

(ii) and a crankcase communicating with the combustion chamber, the crankcase having a partially cylindrical configuration;

(b) piston means disposed between the combustion chamber and crankcase and reciprocally movable to inversely vary the volume thereof with reciprocation;

(c) said engine housing means further defining

(i) transfer passage means establishing fluid communication between the combustion chamber and crankcase, the transfer passage means having inlet port means opening in the crankcase and terminating in transfer port means in the combustion chamber;

(ii) and exhaust passage means establishing fluid communication between the combustion chamber and atmosphere and terminating in exhaust port means in the combustion chamber;

(d) the piston means being constructed and disposed to open and close the transfer and exhaust port means in accordance with said combined cycles of intake, compression, combustion and exhaust;

(e) crankshaft means rotatably carried in said housing means and including crank disc means disposed in the crankcase, the disc means being sized and configured in conformance to the partially circular configuration of the crankcase;

(f) connecting rod means for operably connecting the piston means at an eccentric point on the crank disc means so that reciprocal downstroke and upstroke movements of the piston means cause rotational movement of the crankshaft means;

(g) fuel pocket means disposed on the periphery of the crank disc means in substantial opposition to said eccentric point;

(h) and fuel inlet port means disposed in said engine housing for communication with the fuel pocket means;

(i) said fuel inlet port means and crank disc means being so disposed and arranged that the fuel pocket means communicates with the fuel inlet port means as the piston means moves through its upstroke;

(j) said transfer inlet port means and crank disc means being so disposed and arranged that the fuel pocket means tangentially throws its fuel charge into the transfer passage means as the piston means moves through its downstroke.

4,362,133

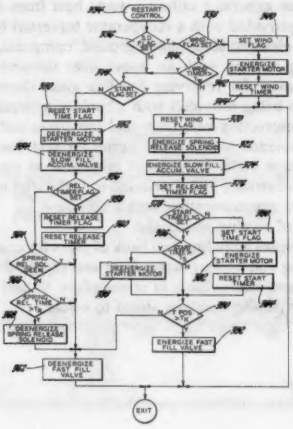
AUTOMATIC ENGINE SHUTDOWN AND RESTART SYSTEM

Marvin J. Malik, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 8, 1981, Ser. No. 261,804

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 K **4 Claims**



1. An automatic restart system for a vehicle internal combustion engine including a starter motor and a manually operable member for controlling engine operation, the system comprising:

an engine driven automatic transmission for transmitting drive power to the vehicle, the transmission including a fluid pressure source, a fluid engageable drive establishing means having a fluid chamber and providing an engagement force varying with fluid pressure in the chamber and a manually operable shift valve in fluid communication with the fluid pressure source and being selectively operable among a plurality of drive positions including an automatic forward drive position, the shift valve coupling the fluid pressure source to an output drive port when in the automatic forward drive position; and

means effective to automatically start the engine while the shift valve is in the automatic forward drive position, said means including (A) means responsive to a first condition of the manually operable member representing a commanded standing start effective to energize the starter motor and fill the chamber in the fluid engageable drive establishing means at a rate to slowly pressurize the cham-

ber for slowly increasing the engagement force for a standing start, (B) means responsive to a second condition of the manually operable member representing a commanded driveaway start effective to energize the starter motor and fill the chamber in the fluid engageable drive establishing means at a rate to quickly pressurize the chamber for quickly increasing the engagement force for a driveaway start, and (C) means responsive to the starting of the engine effective to deenergize the starter motor.

4. The method of shutting down and restarting a vehicle internal combustion engine having a fuel supply means, a manually operable throttle valve for controlling air flow into the engine, a starter motor and an engine driven automatic transmission having a shift valve operable among a plurality of drive positions including a forward drive position and a forward drive clutch providing an engagement force varying with the fluid pressure therein, the method comprising the steps of:

disabling the fuel supply means when the throttle valve is closed and the shift valve is in the forward drive position so as to shut down the engine;

sensing the opening of the throttle valve;

energizing the starter motor and slowly pressurizing the forward drive clutch to provide a slowly increasing engagement force in response to a first characteristic of the throttle valve opening representing a commanded standing start;

energizing the starter motor and quickly pressurizing the forward drive clutch to provide a quickly increasing engagement force in response to a second characteristic of the throttle valve opening representing a commanded driveaway start; and

deenergizing the starter motor when the engine is running.

4,362,134

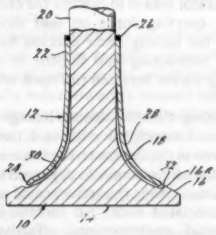
SHIELDED VALVE

Roger P. Worthen, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 908,330, May 22, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,472

Int. Cl.³ F01L 3/20

U.S. Cl. 123—188 AA **6 Claims**



1. In an intake valve of the type including a surface defining a face portion normally exposed to combusting gases in a combustion chamber of an expansible chamber engine, a frustoconical valve seat portion having a minor diameter, a stem portion partly exposed to incoming air for the chamber, and a fillet portion disposed between the seat and stem portions and also exposed to the incoming air,

a fillet heat shield fixed against movement relative to the valve, said shield having a portion covering the fillet portion and a part of the stem portion for reducing the amount of heat flow from the fillet and stem portions to the incoming air, said fillet heat shield being fixed to the stem portion at its end distal from the valve seat portion, the surface of said shield adjacent the stem portion and fillet portion and the covered surface of the valve defining a thermal insulating cavity closed at its fixed end and open at its other end positioned radially inward of the inner diameter of the frustoconical valve seat.

4,362,135

PISTON RING OF INTERNAL COMBUSTION ENGINE

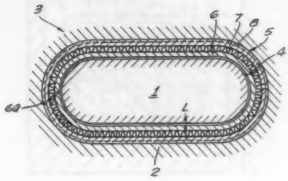
Shoichiro Irimajiri, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 49,735, Jun. 18, 1979, abandoned. This application May 11, 1981, Ser. No. 262,350

Claims priority, application Japan, Jun. 26, 1978, 53-86845[U]

Int. Cl.³ F16J 9/06

U.S. Cl. 123—193 P **2 Claims**



1. An internal combustion engine having an oblong cylinder wall and an oblong piston mounted to reciprocate therein, a continuous piston ring groove formed in said piston, an oblong piston ring assembly positioned within said groove and comprising three discrete rings, an outer ring, an inner ring and an intermediate resilient expander ring, said outer ring provided with an outer periphery in surface contact with said cylinder wall, said inner ring being formed of a material having a high degree of stiffness and substantially continuous about the periphery of said piston ring groove, with only one pair of ends said ends being in abutting relationship, said resilient expander ring being formed of a corrugated plate spring and supported on said inner ring to exert a predetermined expanding force on said outer ring, said inner ring being normally spaced from the inner periphery of said piston ring groove so that lateral displacement of said piston ring assembly is limited by the amount of said spacing during any lateral movement of the piston, thereby equally distributing the load of the corrugated plate spring of said expander ring positioned between the inner ring and the outer ring wherein said outer ring has only one pair of ends defining a single gap therebetween, said gap being positioned opposite from the ends of said inner ring along a central long axis of said oblong piston.

4,362,136

INTERNAL COMBUSTION ENGINE PISTON

Stefan Lipp, Neuhausen, Fed. Rep. of Germany, assignor to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 88,586, Oct. 26, 1979, abandoned. This application Jan. 20, 1982, Ser. No. 341,017

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849276

Int. Cl.³ F02F 3/02

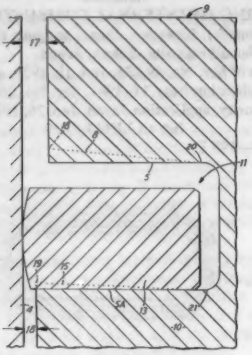
U.S. Cl. 123—193 P **2 Claims**

1. A piston for an internal combustion engine having a crown at its upper end and an annular groove in the surface of its outer circumference for receiving a piston ring to be located in said groove, said groove having a generally axially extending inner wall joining together an upper flank and a lower flank, the upper flank being closer to the crown of the piston than the lower flank, said upper and lower flanks being manufactured at angles such that, in a cold condition of the piston:

(a) the upper flank is angled radially upwardly, and has its outer edge located above a region formed by the upper flank meeting the inner wall,

(b) the lower flank is angled radially upwardly, and has its outer edge located above a region formed by the lower flank meeting the inner wall

(c) the angle of the upper flank is smaller than that of the angle of the lower flank is relation to the piston axis so that the outer edges of the flanks are further apart than their inner corners.



(d) the angles of the flanks are such that under normal hot running conditions in an engine the flanks both assume positions substantially in planes at right angles to the piston axis.

4,362,137

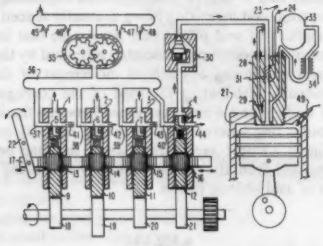
HYDROGEN PYROLYSIS FUEL INJECTION

Louis R. O'Hare, 1041 Ponderosa #2, Ft. Collins, Colo. 80521

Filed May 7, 1980, Ser. No. 147,486

Int. Cl.[3] F02B *43/08*; F02M *31/20, 31/02*

U.S. Cl. 123—295 **4 Claims**



1. A hydrogen enrichment fuel injection system for burning ultralean fuel-air mixtures in gasoline type engines comprising,

variable metering and high pressure pumping means for pumping discrete metered quantities of liquid fuel in consecutive pulses with these metered quantities being controllable to coincide with variable engine power demands, the greater the demand the more the fuel metered, and

timing means whereby the consecutive pulses arrive at cylinders of the engine one after another, first at one cylinder then at another and so on in an order which is determined by engine firing order and at such a time duration in each cylinder that each cylinder receiving fuel in its proper sequence is at a period in its compression cycle when it begins to receive the pulse of fuel and has completed receiving the fuel pulse in a period before the completion of that same compression cycle and,

pressure valving control means whereby fuel injection begins only when injection pressure is high enough to assure a positive pressure surge into the cylinder against air being compressed in each cylinder and,

controlled hydrogen removal injector means comprising an injector housing containing a pyrolysis means comprising a chamber wherein each discrete fuel quantity is heated separately and by this heating effecting a partial pyrolysis of the liquid fuel thereby separating a quantity of hydrogen gas from the fuel and a cooling means for cooling a resulting mixture of the hydrogen gas and remaining fuel below ignition temperature by ducting said mixture through a cooler, wherein said mixture is injected into each cylinder while still under the pressure exerted by the fuel pumping means and,

a fuel-air ignition means.

4,362,138

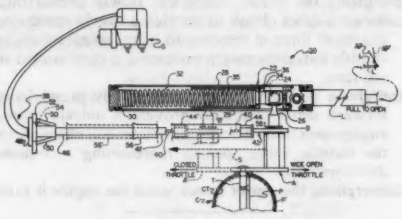
CHANGEABLE LENGTH ACCELERATOR-CARBURETOR-SPEED REGULATOR LINKAGE

Ronald M. Krueger, Wrightsville Beach, and Harry D. Sturdy, Wilmington, both of N.C., assignors to Sturdy Truck Equipment, Inc., Wilmington, N.C.

Filed Apr. 8, 1981, Ser. No. 252,224

Int. Cl.[3] F02D *1/08, 1/04, 31/00, 33/00*

U.S. Cl. 123—342 **6 Claims**



1. A throttle actuator for an engine having a throttle, a governor, and a driver operated accelerator means, said actuator including:

(a) first biasing means associated with said throttle for biasing it toward its closed position;

(b) a throttle-linking means adapted to be connected between said accelerator means and said throttle and having a predetermined effective length for normally permitting said accelerator means to control the energy supply to said engine by exerting force on said throttle sufficient to overcome the biasing force exerted by said first biasing means for positioning said throttle in opposition to said first biasing means between full open and full closed positions;

(c) an overriding throttle closing linkage operated by said governor and associated with said throttle for exerting force thereon in opposition to the force exerted thereon by said throttle-linking means to urge said throttle toward its closed position under the influence of said governor; and

(d) means associated with said throttle-linking means for changing said predetermined effective length thereof when said accelerator means is operated to move said throttle from its closed position and said overriding linkage is operated to move said throttle toward its closed position, said length changing means comprising:

(i) a connecting link having relatively movable elements associated respectively with said accelerator means and said throttle and

(ii) second biasing means slightly stronger than said first biasing means for normally maintaining said movable elements in fixed relation to one another by exerting force therebetween during normal operation of said throttle by said accelerator means and for permitting relative movement of said movable elements to change the effective length of said throttle linking member when the combined forces exerted by said first biasing means and said overriding linkage exceed the force exerted by said second biasing means in opposition

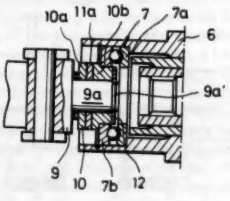
thereto whereby operation of the accelerator means is not significantly affected by the operation of said overriding means.

4,362,139

VIBRATION ABSORBER FOR CENTRIFUGAL GOVERNOR

Hiroshi Isobe; Masao Yoshino, and Koji Fukushima, all of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 969,319, Dec. 14, 1978, Pat. No. 4,263,881. This application Feb. 13, 1981, Ser. No. 234,399
Claims priority, application Japan, Dec. 28, 1977, 52-175760
The portion of the term of this patent subsequent to Apr. 28, 1997, has been disclaimed.
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—364 8 Claims



1. A centrifugal governor for use with a fuel injection pump controlling the speed of an engine, the governor comprising:

a rotatable cam shaft adapted to be drivingly coupled to said fuel injection pump;

a plurality of flyweights pivotally mounted on said cam shaft so as to pivotally move radially outwardly of said cam shaft due to acceleration in the rotation of said cam shaft and to pivotally move inwardly toward said cam shaft due to a deceleration in the rotation of said cam shaft;

a shifter coupled to said flyweights and arranged for displacement in response to said radially outward and inward pivotal movements of said flyweights, said shifter having two ends, one end of which comprises an extending member;

said governor being actuatable in response to said displacement of said shifter for varying the injection quantity of said fuel injection pump to provide a controlled engine speed;

a sleeve arranged for displacement in response to said radially outward and inward pivotal movements of said flyweights, said extending member at said one end of said shifter being engaged within said sleeve for displacement together with said sleeve;

a bush fitted over said extending member at said one end of said shifter, said bush being axially split in two parts; and

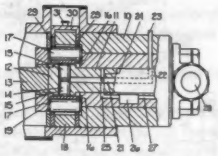
a vibration damper means having opposite sides respectively interposed between said two parts of said bush so as to be located between said sleeve and said extending member of said shifter for absorbing vibrations of said flyweights, thereby preventing said flyweight vibrations from being transmitted to said shifter.

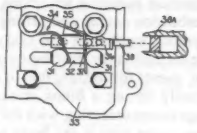
4,362,140

LIQUID FUEL INJECTION PUMPS

John R. Jefferson, Rainham, and Frank Cunliffe, Doddington, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Oct. 2, 1980, Ser. No. 193,086
Claims priority, application United Kingdom, Oct. 20, 1979, 7936479
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—366 3 Claims



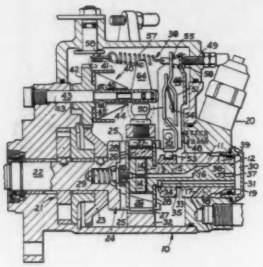


1. A liquid fuel injection pump for supplying fuel to a multicylinder internal combustion engine and of the kind comprising a rotary distributor member housed in a body and driven in use in timed relationship with an associated engine, a transverse bore formed in the distributor member and a plunger in said bore, a delivery passage communicating with the bore and arranged to register in turn with outlets in the body, as the distributor member rotates and during successive inward movement of the plunger, a cam ring surrounding the distributor member and having inwardly extending cam lobes for imparting said inward movements to the plunger, fuel supply means for supplying fuel to the bore during at least part of the time when the plunger is allowed to move outwardly by the cam lobes, said fuel supply means including an inlet port in the body to which fuel is supplied from a low pressure source, means for controlling the amount of fuel supplied through said port and stop means for limiting the outward movement of the plunger, said stop means comprising a ring mounted in the body for angular movement, said ring having a profile on its internal surface for engagement by a part associated with the plunger to limit the outward movement of the plunger, means effecting angular adjustment of said ring so that the amount of fuel which can be supplied to said bore can be varied, said means including a movable member, a first coiled torsion spring continuously biasing said member to a first position in which the ring is set for the normal maximum amount of fuel supply to the engine, a second coiled torsion spring stronger than said first spring continuously acting on said member to oppose the force produced by the first coiled torsion spring to continuously urge the member toward a second position in which the ring is set for an extra or excess amount of fuel supply to the engine, and means operable in use to force said member in the same direction as the first torsion spring so that the force exerted by said second spring on the member is overcome and the member is moved to said first position.

4,362,141
FUEL INJECTION PUMPING APPARATUS

Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 27, 1981, Ser. No. 228,785
Claims priority, application United Kingdom, Feb. 16, 1980, 8005311; Dec. 31, 1980, 8041538
Int. Cl.³ F02M 39/00
U.S. Cl. 123—449 16 Claims



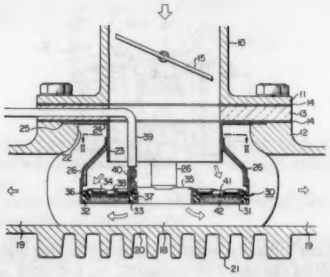
1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine comprising a body part, a rotary distributor member located in the body part, an outwardly extending bore formed in the distributor member and a plunger located therein, means for feeding fuel to said bore to move the plunger outwardly during a filling stroke of the apparatus, a delivery passage communicating with the bore and arranged to register with an outlet port in the body part during a delivery stroke of the apparatus, a cam for imparting inward movement to the plunger to effect delivery of fuel, stop means for limiting the outward movement of the plunger and means for varying the axial setting of the distributor member, said stop means being arranged so that the amount of fuel delivered during the delivery stroke depends upon the axial setting of the distributor member, resilient means for biassing the distributor member in one axial direction, a variable volume chamber defined in part by an end face of the distributor member, said resilient means acting to urge the distributor member in a direction to reduce the volume of said chamber, an axially movable sleeve carried on said distributor member, said sleeve in conjunction with passage means in said distributor member which communicates with said chamber, acting to control the volume of liquid in said chamber, governor means operable to adjust the axial position of said sleeve, a low pressure pump for supplying liquid under pressure, a first passage for conveying liquid from the outlet of the pump to said chamber and said passage means comprising a second passage formed in the distributor member and in communication at one end with said chamber and at its other end with a port on the periphery of the distributor member, said port being positioned so that the flow of liquid therethrough is determined by the relative axial position of the sleeve and distributor member.

4,362,142
FUEL HEATING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Toshihiko Igashira, Toyokawa; Hitoshi Yoshida; Ken Nomura, both of Okazaki, and Seikou Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 9, 1980, Ser. No. 195,505
Claims priority, application Japan, Nov. 30, 1979, 54-155766
Int. Cl.³ F02M 31/00
U.S. Cl. 123—549 8 Claims

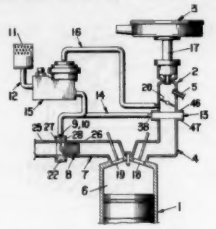
1. In an internal combustion engine including an intake pipe, a throttle valve provided therein, means upstream of said throttle valve for supplying liquid fuel into said intake pipe and an intake manifold for distributing a mixture of air and the fuel to respective engine cylinders, said intake manifold defining an inlet opening connected to the bottom end of said intake pipe, the improvement which comprises a fuel heating apparatus including a tubular extension member disposed substantially coaxially with said intake pipe and extending downwardly through said inlet opening into said intake manifold and having a substantially cylindrical inner peripheral surface substantially flush with the inner peripheral surface of said intake pipe, and an annular heating element disposed in said intake manifold substantially in vertical alignment with the peripheral wall of said tubular extension member and supported therefrom wherein said inlet opening in said intake manifold is substantially coaxial with said intake pipe and has an inner diameter greater than the inner diameter of said intake pipe, the part of said intake manifold below said inlet opening defining a distribution chamber from which the mixture of air and fuel is distributed through branches of said intake manifold to respective engine cylinders, said heating element including a generally annular casing disposed in said distribution chamber and spaced downwardly a distance from the bottom end of said tubular extension member, at least one stay supporting said casing from said tubular extension member, said casing having a substantially annular open top disposed beneath the bottom end of said tubular extension member so that the part of the fuel which flows in liquid phase on the inner peripheral surfaces of said intake pipe and said tubular extension member falls down therefrom into said casing, a substantially annular heating means disposed in said casing and adapted to be electrically energized to heat and vaporize the liquid part received in said casing, wherein the part of said intake manifold which defines said inlet opening has a flat top surface secured to the bottom end of said intake pipe with a heat insulating member and a gasket member being sandwiched therebetween, said flat top surface being formed with an annular recess adjacent the peripheral edge of said inlet opening, and wherein said tubular extension member has an annular flange extending radially outwardly from the upper end of said tubular extension member into said annular recess, said annular flange having a top surface substantially flush with the top surface of said intake manifold around said annular recess, wherein said heating element further includes inner and outer annular packings disposed in said casing in substantially concentric relationship with each other, said annular heating means comprising an annular heating plate of a sheet metal having inner and outer peripheral edges axially and radially supported by said inner and outer packings, an annular ceramic heater disposed in heat-conductive relationship with the underside of said heating plate and adapted to be electrically connected to an electric power source, said ceramic heater being also electrically connected to said casing.



4,362,143
EXHAUST GAS SUPPRESSOR

Masafumi Fukumoto, Amagasaki, Japan, assignor to Nissin Jabara Industries Co., Ltd., Amagasaki, Japan

Filed Apr. 24, 1981, Ser. No. 257,344
Claims priority, application Japan, Jun. 2, 1980, 55-74576
Int. Cl.³ F02M *23/14*
U.S. Cl. 123—556 6 Claims

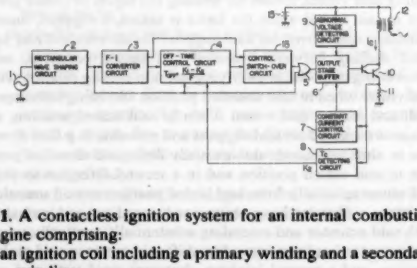


1. An exhaust gas suppressor for internal combustion engines, comprising, a coiled heater tube formed of a metal tube in the form of a bellows, the ends of which extend outwardly through the exhaust manifold for heating secondary air by the heat of exhaust gases in said manifold and are inserted in holes in a heater tube attaching ring which is hermetically sealed and removably installed in a required place in the exhaust manifold, a secondary air introducing tube having an air filter on one end thereof opening to the atmosphere and connected at the other end thereof to one end of said heater tube, a heated secondary air feed tube connected at one end thereof to the other end of said heater tube and communicating at the other end thereof with the suction manifold for supplying secondary air heated by said heater tube to a mixture of primary air and fuel prepared by the carburetor, an eddy generating device disposed in the suction manifold and connected to the other end of said heated secondary air feed tube for eddying said primary air-fuel mixture and heated secondary air added thereto, and an air control valve placed between the ends of said secondary air introducing tube for controlling the amount of heated secondary air to be supplied in relation to the amount of said mixed gas.

4,362,144
CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toshiyuki Yamaguchi, Okazaki; Hiroyuki Nobechi, Toyota; Yoshiaki Nakano, Gifu, and Tiaki Mizuno, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 22, 1981, Ser. No. 227,249
Claims priority, application Japan, Jan. 24, 1980, 55-7077
Int. Cl.³ F02P *3/04*
U.S. Cl. 123—609 3 Claims



1. A contactless ignition system for an internal combustion engine comprising:

an ignition coil including a primary winding and a secondary winding;

semiconductor switching means connected to the primary winding of said ignition coil for controlling the primary current supply through the primary winding of said ignition coil;

current detecting means connected to said switching means for detecting the level of primary current supplied to the primary winding of said ignition coil;

a rising time detecting circuit connected to said current detecting means for detecting the rising period of time of the primary current until the level of the primary current attains a predetermined setting after the primary current starts to be supplied to the primary winding of said ignition coil, thereby generating a signal indicative of the rising time of the primary current;

means for generating a rectangular waveform signal having a period synchronized with the rotational period of the engine;

means for generating a current proportional to the rotational speed of the engine;

an off-time control circuit producing, on the basis of said current proportional to the rotational speed of the engine and said rising-time indicative signal, an off-time control signal for controlling the off-time of said ignition coil and to provide dwell angle control;

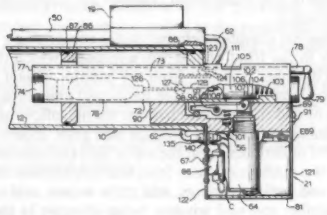
a control switch-over circuit gating said off-time control signal only when the engine rotation period indicated by the level of said current proportional to the rotational speed of the engine is shorter than a predetermined setting; and

an OR circuit controlling the off-time of said switching means on the basis of the logical sum of the output signal from said control switch-over circuit and said rectangular waveform signal.

4,362,145
PRACTICE WEAPON INCLUDING PELLET GUN MOUNTED WITHIN MISSILE FIRING TUBE

William N. Stelcher, Deerfield, Ill., assignor to Kinetronics Corporation, Lake Bluff, Ill.

Filed Dec. 22, 1980, Ser. No. 219,222
Int. Cl.³ F41F *27/00*; F41B *11/06*
U.S. Cl. 124—32 4 Claims



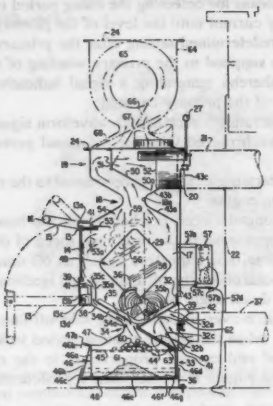
1. A practice weapon comprising a firing tube through which a rocket missile can be fired, a firing trigger mounted on said firing tube, a pellet gun for firing pellets through said tube, means for mounting said pellet gun within said tube and means connecting said firing trigger to said pellet gun for firing it, wherein said pellet gun has a firing sear and includes an electrical solenoid connected to move said firing sear, a battery with one side connected to one side of said solenoid and a first electrical switch actuated by said firing trigger to energize said solenoid, a capacitor with one side connected to said solenoid and said battery, said first electrical switch with its movable contact connected to the other side of said capacitor and movable to a firing position to contact a first contact connected to the second side of said solenoid and movable to engage a second contact connected to engage the second side of said battery for charging said capacitor.

4,362,146

SOLID FUEL STOVE

Marius C. Schuller, 112 Cork St., W., Guelph, Ontario, Canada

Filed Jul. 1, 1980, Ser. No. 165,157
Claims priority, application Canada, May 12, 1980, 351709
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—77 **56 Claims**



1. In a stove comprising a housing defining a combustion chamber, said housing being provided with a window through which said combustion chamber is visible from the exterior of said stove, means defining an inlet for admitting an inflow of air into said combustion chamber, means for supporting fuel for combustion in said combustion chamber and means for directing a portion of said air inflow upwardly past a surface of said window facing inwardly of said combustion chamber, the improvement comprising means for deflecting said air inflow portion from said inlet opening under and in contact with said fuel support means for preheating said air inflow portion prior to arrival thereof at said window surface.

2. A stove, comprising:

means defining a combustion chamber;

grate means in said combustion chamber for supporting fuel to be combusted;

said combustion chamber defining means comprising a vertical window in the front of said stove through which the combustion chamber is visible from the exterior of said stove;

a horizontal inlet opening located under said grate means at the bottom of said combustion chamber for the inflow of air into said combustion chamber through said grate means;

a horizontal outlet opening at the top of said combustion chamber for the outflow of gases from said combustion chamber;

said inlet and outlet openings, said grate means, said combustion chamber and said window being elongate in the direction of the width of said stove;

an air inlet communicating with said inlet opening for supplying the air thereto;

means for controlling air flow through said inlet; and

means in said combustion chamber for deflecting portion of the air upwardly past the face of said window directed inwardly of said combustion chamber.

4,362,147

ADJUSTABLE FIREPLACE PANEL

Anthony H. Taglavore, Rte. 3, 198 Sunset Dr., Gallatin, Tenn. 37066

Filed Jan. 12, 1981, Ser. No. 224,295
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—140 **19 Claims**

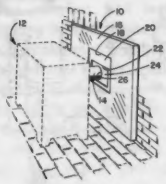
1. An adjustable fireplace adapter panel for covering an opening to a fireplace and for receiving a stovepipe to utilize the fireplace and chimney as an exhaust system for a stove, comprising:

a main panel dimensioned for covering the opening of the fireplace;

means for securing said main panel against the face of the fireplace in a position covering the opening thereof;

a first aperture formed in said main panel;

a first plate dimensioned to cover said first aperture and disposed on said main panel over said first aperture;



a second aperture formed in said first plate, having dimensions smaller than said first aperture and being disposed within the perimeter of said first aperture;

first clamp means for clamping and securing said first plate to said main panel; and

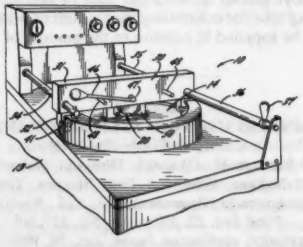
said first plate being movable through an infinity of positions on said main panel beneath said first clamp means so that said second aperture may be moved to an infinity of different positions within the perimeter of said first aperture.

4,362,148

COOKING DEVICE WITH COVER LOCKING MEANS

Clement J. Luebke, Beloit, Wis., and Lowell W. Daniels, Rockford, Ill., assignors to Alco Standard Corporation, Valley Forge, Pa.

Filed Jun. 30, 1980, Ser. No. 164,244
Int. Cl.³ F24D *1/00*; B65D *43/20*
U.S. Cl. 126—369 **4 Claims**



1. A cooking device comprising an open-topped vessel adapted to hold liquid, a cover for selectively closing and sealing said vessel, means for heating the liquid to create pressure in said vessel when the latter is sealed, a support, means mounting said cover on said support for downward and upward shifting between unsealed and sealed positions, said cover being disposed in overlying but non-sealing relation with said vessel when in said unsealed position and being telescoped with and sealing said vessel when in said sealed position, an actuator mounted on said support and movable in a first direction to shift said cover downwardly from said unsealed position to said sealed position and in a second direction to shift said cover upwardly from said sealed position to said unsealed position, a first latching abutment located on and movable with said actuator and extending substantially vertically when said actuator has been moved to shift said cover to said sealed position, and a second latching abutment rigid with and extending substantially vertically from said cover, said second

latching abutment being movable in unison with said cover and into latching relation with said first latching abutment on said actuator when said cover is in said sealed position and the pressure in said vessel causes said cover to rise, said second latching abutment being immovable relative to said cover and being operable when in latching relation with said first latching abutment on said actuator to restrict movement of said actuator in said second direction thereby to render said actuator ineffective to shift said cover upwardly from said sealed position.

4,362,149

HEAT STORAGE SYSTEM AND METHOD

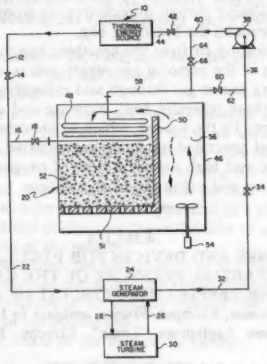
Wallace B. Thomson, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 8, 1980, Ser. No. 214,380

The portion of the term of this patent subsequent to Sep. 16, 1997, has been disclaimed.

Int. Cl.³ F24H *7/00*; F03G *7/02*; F28D *13/00*

U.S. Cl. 126—400 **13 Claims**



1. A thermal energy storage system comprising:

a source of heat for heating a heat collecting fluid to a temperature within the range of from about 600° to 1600° F.;

a housing containing a bed of rocks for storage of thermal energy;

a heat transfer gas in heat-exchange relationship with said bed of rocks;

means for moving said heat transfer gas through said bed of rocks at an apparent velocity of less than about 6 ft/sec;

means for causing said heat collecting fluid and said heat transfer gas to flow in counter-current, indirect, heat-exchange relationship with one another, said means including means for reversing the direction of flow of said heat collecting fluid and said heat transfer gas;

a working fluid;

means for passing said working fluid and said heat collecting fluid in indirect, heat-exchange relationship with one another; and

means operatively associated with said working fluid to convert thermal energy contained therein to mechanical energy.

4,362,150

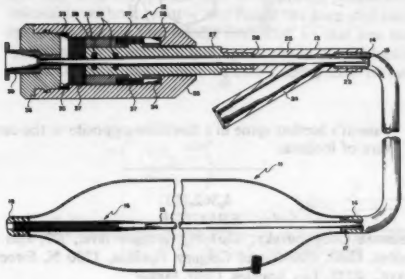
PERCUTANEOUS INTRA-AORTIC BALLOON APPARATUS

Edward J. Lombardi, Jr., Malden; Harold L. Neuman, Reading; Alfred E. Magro, Woburn, and Michael L. Rishton, Reading, all of Mass., assignors to Kontron Cardiovascular Inc., Everett, Mass.

Filed Sep. 10, 1980, Ser. No. 185,762

Int. Cl.³ A61B *19/00*; A61M *25/00*

U.S. Cl. 128—1 D **32 Claims**



1. In a balloon catheter appratus including a hollow catheter having a proximate end and a distal end, and an inflatable and deflatable balloon having a proximate end and a distal end, said proximate end of the balloon being sealably attached to the distal end of the catheter for admitting fluid and withdrawing fluid from the balloon, the improved combination comprising:

(a) a longitudinally flexible metal tubular member having a proximate end portion and a distal end portion and rotatably disposed within and extending the length of the catheter and into the balloon, said distal end portion of the tubular member being fixedly attached to the distal end of said balloon;

(b) a non-metallic tube portion fixedly attached to said distal end portion of the metal tubular member, said tube portion having relatively low resistance to lateral bending and being circumferentially rigid to withstand rotational torque without substantial distortion; and

(c) rotating means coupled to the proximate end of said catheter and fixedly attached to the proximate end portion of said tubular member for effecting wrapping and unwrapping of said balloon about said tubular member, said tubular member being rotated with respect to said catheter upon rotation of said rotating means with respect to said catheter, said tubular member defining a continuous open passage from and through said rotating means to and through said balloon.

4,362,151

TRACTION METHOD

George W. Cottrell, #10, 2455 NW. Marshall, Portland, Oreg. 97210

Filed Jan. 26, 1981, Ser. No. 228,366

Int. Cl.³ A61H *1/02*

U.S. Cl. 128—75 **6 Claims**

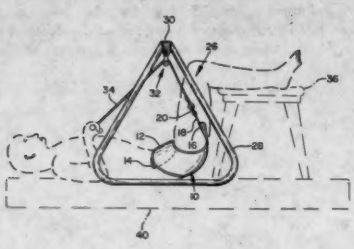
1. A method of treating a human patient to apply traction force to the lumbar spine operable to overcome anatomical lordosis comprising:

encircling the abdominal area and buttocks of the patient with a restraining device,

positioning the patient in a supine position on a support, and

lifting and holding the patient through said restraining device, at a region of the device located on the under or buttocks side of the patient with the patient supine and toward the knees of the patient from the zones where the

patient's femurs articulate with the patient's pelvis, whereby the weight of the patient forces curvature of the



patient's lumbar spine in a direction opposite to the curvature of lordosis.

4,362,152

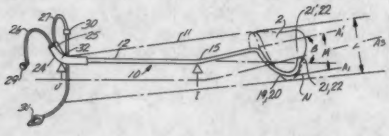
ERECTOR

Veniamin Gorokhovsky, 1231 N. Genesee Ave., #7, Los Angeles, Calif. 90046, and Grigory Fradkin, 1230 N. Sweetzer Ave., #313, Los Angeles, Calif. 90069

Filed Jul. 2, 1980, Ser. No. 165,248

Int. Cl.³ A61F *5/42*

U.S. Cl. 128—79 **31 Claims**



31. A method for inducing erection of a penis comprising:

securing a prosthetic device around the root of the penis so that an elongate member of the device projects roughly perpendicularly away from the male torso in contact with the shaft of the penis just above the superficial dorsal vein;

supporting the weight of the glans of the penis through the prosthetic device; and

bending the glans upwardly relative to the longitudinal axis of the shaft to convert the weight of the glans into pressure applied by the member to the superficial dorsal vein to constrict the flow of blood from the penis thereby to induce erection of the penis.

4,362,153

BREATHING APPARATUS

John G. Wilson, Worsley, and John Scott, Doncaster, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Nov. 5, 1980, Ser. No. 204,109

Claims priority, application United Kingdom, Nov. 27, 1979, 7940867

Int. Cl.³ A62B *7/00*

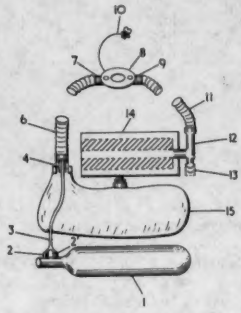
U.S. Cl. 128—202.26 **6 Claims**

1. A method of reducing heat generated in a breathing apparatus used in an irrespirable atmosphere comprising a high pressure oxygen source provided with reducing valve means presettable to give a continuous high sustained constant flow rate of oxygen from the source in the range of 4 to 30 l/min, personal gas supply means to which the flow of oxygen is supplied, said gas supply means having an inhalation section with an inhalation valve and an exhalation section with an exhalation valve, a regenerative section connected to the exhalation section for absorbing carbon dioxide from exhaled air and a breathing bag connected to the regenerative section so that exhalations which have passed through the regenerative section flow into said bag, the bag having a connection to the inhalation section, and means for exhausting excess gas from the breathing circuit; said method comprising

releasing oxygen from the high pressure source through the reducing valve means pre-set to give a continuous high sustained constant flow rate of oxygen in the range of about 4 to 30 l/min,

communicating said continuous high sustained constant flow rate of oxygen to the inhalation section of personal gas supply means which supplies breathable gas to a wearer,

communicating exhaled air from the exhalation section of



the personal gas supply means to the regenerative means for absorbing carbon dioxide from said exhaled air,

communicating carbon dioxide-free air from the regenerative means to the breathing bag,

communicating air from the breathing bag to the inhalation section of the personal gas supply means, and

exhausting excess gas through said exhausting means to the atmosphere whereby heat, moisture and carbon dioxide produced by the wearer, which would otherwise increase the heat generated inside the regenerative section, is carried by said high sustained flow of oxygen through said apparatus and exhausted to atmosphere.

4,362,154

PROCESSES AND DEVICES FOR REGULATING THE OXYGEN PARTIAL PRESSURE OF THE GAS MIXTURE OF THE RESPIRATORY CIRCUIT OF A DIVER

Yves Le Masson, Etampes, France, assignor to Laboratories de Mecaniques Appliquees "Lama", Etrechy, France, a part interest

PCT No. PCT/FR80/00042, § 371 Date Nov. 21, 1980, § 102(e) Date Nov. 17, 1980, PCT Pub. No. WO80/02016, PCT Pub. Date Oct. 2, 1980

PCT Filed Mar. 21, 1980, Ser. No. 224,567

Claims priority, application France, Mar. 21, 1979, 79 07137; Oct. 5, 1979, 79 24850

Int. Cl.³ B63C *11/20*

U.S. Cl. 128—204.22 **21 Claims**

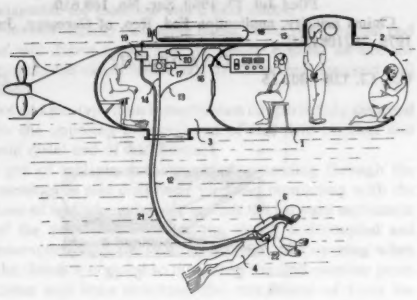
1. A process for regulating the oxygen partial pressure of a gas mixture in a respiratory circuit of a diver, the diver being provided with a closed circuit breathing apparatus connected to a remotely located monitor chamber in which there is a pressure equal to or close to atmospheric pressure, said process comprising:

(a) continuously removing a sample of the gas mixture of the respiratory circuit of the diver;

(b) passing said sample into the monitor chamber where it expands, the partial oxygen pressure of the sample being determined therein, and an electrical control signal being produced when the pressure determined falls below a reference value; and

(c) using the control signal for triggering an injection of a defined and preset amount of an oxygen-rich gas mixture

to the respiratory circuit of the diver, the sample from the respiratory circuit being passed to the monitor chamber by a capillary conduit so that the variation in the oxygen partial pressure at the outlet from the capillary conduit



reproduces the variation in the pressure at the inlet of the capillary conduit and, therefore, in the respiratory circuit, with a delay, the section of the capillary conduit being so selected as to limit the duration of the transfer of the sample along the capillary conduit.

4,362,155

METHOD AND APPARATUS FOR THE TREATMENT OF AUTOIMMUNE AND ALLERGIC DISEASES

Simon V. Skurkovich, 261 Congressional La., #709, Rockville, Md. 20852

Filed Mar. 24, 1981, Ser. No. 247,205
Int. Cl.³ A61M *1/03*
U.S. Cl. 128—214 R **12 Claims**

1. A method for treating autoimmune diseases and allergy (hypersensitivity of immediate type) using an apparatus having, in continuous fluid communication, an inlet tube, absorbing means for absorbing and thereby removing interferon from the whole blood, and an outlet tube, said method comprising:

connecting the inlet tube of said apparatus to a blood vessel of a patient and connecting the outlet tube of said apparatus to a vein of the patient;

removing blood from the blood vessel of the patient;

passing the removed blood through the absorbing means for absorbing interferon to thereby reduce the amount of interferon in the blood; and

returning the blood to the vein of the patient.

4,362,156

INTRAVENOUS INFUSION ASSEMBLY

John Feller, Jr., Vandalia, and Stanley C. Wells, Jr., Centerville, both of Ohio, assignors to Riverain Corporation, Dayton, Ohio

Filed Apr. 18, 1979, Ser. No. 31,306
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—165 **10 Claims**

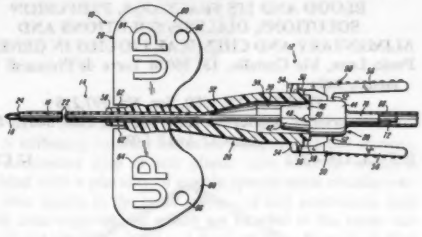
1. An infusion assembly comprising:

a needle assembly comprising a hollow needle and a needle hub rigidly connected to said needle;

an over-the-needle catheter assembly comprising a catheter, and a catheter hub fixedly connected to said catheter;

a gripping assembly comprising a pair of wings flexibly connected to said catheter assembly having a relaxed condition wherein they extend generally transversely to the longitudinal axis of said catheter assembly, said wings and their connection to said catheter assembly being sufficiently flexible that they may be gripped by the thumb and forefinger and brought into face-to-face engagement with one another without substantial distortion of said catheter;

releasable locking means comprising a pair of clamp arms fixed to said needle hub by pivot means, said clamp arms being on opposite sides of an upwardly directed plane containing the longitudinal axis of said needle and including engaging members on said clamp arms for engging parts fixed to said catheter hub and thereby connecting and preventing relative axial movement between said needle assembly and said catheter assembly with said needle extending through said catheter so that one may, by gripping said wings, move said catheter assembly and said needle assembly together for insertion of said needle and said catheter into a vein, said locking means being releasable without relative movement between said catheter assembly and said needle assembly, so that one may, following such insertion and upon release of said locking means, retract said needle assembly from said catheter



assembly and the vein so that only said catheter remains in the vein;

interfitting means on said needle hub and said catheter hub preventing relative rotation therebetween when said needle assembly and said catheter assembly are connected by said locking means, said interfitting means establishing an alignment between said catheter assembly and said needle assembly such that upwardly facing surfaces of said wings face the same direction as the upwardly facing surfaces of said needle so that said wings are on opposite sides of said upwardly directed plane containing the longitudinal axis of said needle; and

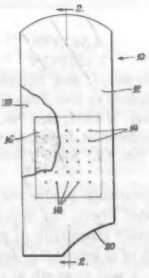
said needle hub comprising a body having a distally facing surface abutting the proximal end of said catheter hub when said needle assembly and said catheter assembly are connected together.

4,362,157

TEMPLATE FOR LOCATING HYPODERMIC INJECTION SITES

John D. Keeth, 1416 Naperville Rd., Wheaton, Ill. 60187

Filed Feb. 18, 1981, Ser. No. 235,768
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—215 **19 Claims**



1. A template for identifying a set of skin sites in a shot range

for hypodermic injection and repeatedly locating unused sites in the set of sites for succeeding injections comprising:

a first flexible sheet having a plurality of orifice marking means at predetermined spaced intervals on said sheet corresponding to and identifying said set of skin sites;

a flexible layer of liquid permeable absorbent material having a plurality of orifices aligned with said orifice marking means and capable of absorbing a coloring dye and retaining said coloring covering said marking means; and

means for locating said template on a particular portion of the skin so that said marking means are repeatedly aligned with said set of skin sites.

4,362,158

SYNTHETIC BAG-TYPE CONTAINER FOR HUMAN BLOOD AND ITS FRACTIONS, PERFUSION SOLUTIONS, DIALYSIS SOLUTIONS AND ALIMENTARY AND CHEMICAL LIQUIDS IN GENERAL

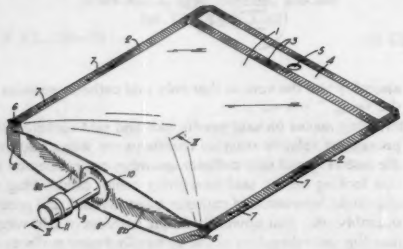
Paolo Lena, Via Castello, 13, 26038 Torre de'Picenardi (Cremona), Italy

Filed Oct. 15, 1980, Ser. No. 197,225

Claims priority, application Italy, Jan. 22, 1980, 34810/80[U]

Int. Cl.³ A61J *1/00*

U.S. Cl. 128—272 **12 Claims**



1. A generally flat synthetic bag-type container for human blood and its fractions, perfusion solutions, dialysis solutions and alimentary and chemical liquids in general, constituted by a thin flexible walled casing which is in the form of a rectangular envelope having a bellows-shaped base and comprised of a single thin, pliable synthetic film sheet, and which is hermetically closed by welding along three edges of its perimeter while on its remaining edge at its base there is provided, integral with the sheet, a bellows facing towards the interior of the casing, said bellows having a central zone, of which there branches a nozzle set sealed to and extending from said central zone, each nozzle being provided with a resilient sealing member; and means along said three welded edges for supporting said casing.

4,362,159

TAMPON

Akira Sakurai, Utsunomiya, and Hiroshi Mizutani, Yachiyo, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,542

Claims priority, application Japan, Oct. 15, 1980, 55-144164

Int. Cl.³ A61F *13/20*

U.S. Cl. 128—285 **6 Claims**

1. In a tampon comprising an absorbent material composed of compression molded fibers, the improvement which comprises: said fibers consist essentially of polynosic rayon fibers having a dry strength of at least 4.0 g/denier, a wet strength of at least 3.0 g/denier, a wet strength at a 5% elongation of at least 1.0 g/denier and a wet elongation of not more than 3.0% under a load of 0.5 g/denier.

4,362,160

ENDOSCOPES

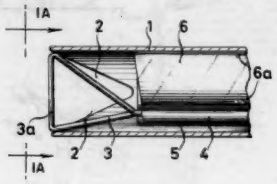
Siegfried Hiltebrandt, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,610

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 7921081[U]

Int. Cl.³ A61B *17/32*

U.S. Cl. 128—303.15 **4 Claims**



1. An endoscope for coagulating or resectioning damaged parts of the cartilage of the meniscus of the knee joint under application of a unipolar HF loop electrode that has a supply lead which extends, together with an optical system, through an endoscope tube for proximal connection to an HF generator, wherein said endoscope tube is electrically insulated to prevent injury to adjacent areas of the knee joint anatomy and is provided at its distal end with distal delimiting excisions at either side of its vertical axial plane to form apertures in the sides of the tube for enflanking the damaged cartilage, said excisions having a geometry corresponding nearly to the cartilage to be enflanked, and wherein a stem delimiting said electrode loop at the distal end is situated in said vertical axial plane in the protected area of and between said excisions at the distal end of said tube.

4,362,161

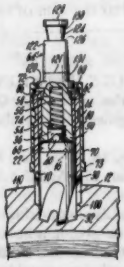
CRANIAL DRILL

Harry G. Reimels, Braintree; Daniel G. Cerundolo, Dedham, and Roy W. Downing, Hingham, all of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Oct. 27, 1980, Ser. No. 200,725

Int. Cl.³ A61B *17/16*

U.S. Cl. 128—310 **13 Claims**



11. An apparatus for drilling bone structures comprising:

a generally annular drill body having generally triangular shaped, diametrically opposed openings extending therethrough, the bases of said triangular shaped openings being aligned generally circumferentially about said drill body and the sides of said openings being aligned at an angle to the axis of said drill body, the proximal end of said drill body including a bearing surface;

a generally cylindrical primary drill member freely, slidably

and rotationally disposed within said drill body and having cutting surfaces on the distal end thereof;

a generally cylindrical drill driver rotatably and slidably disposed into the proximal end of said drill body and having a stem projecting from the proximal end thereof adaptable for insertion into a drill chuck;

a generally radially extending flange about the proximal end of said driver facing said drill body bearing surface for limiting the extent which said driver extends into said drill body;

a slot and pin-type clutch mechanism cooperatively disposed on the opposing proximal end of said drill member and said distal end of said driver;

the pin of said pin and slot clutch extending through the openings in said drill body wall and interacting with the base of said triangular slot to limit the forward movement of the drill member when the clutch is decoupled and interacting with the side of said triangular opening when the clutch is coupled so that when the drill member penetrates said bone structure, the component of force between the pin and the openings tends to accelerate the coupling of the clutch;

said clutch means further including a compression spring disposed between confronting surfaces of said drill member and said driver for urging the two apart and providing a resistance force which is overcome when the drill member is pushed against the bone structure and drilling begins.

4,362,162

SURGICAL SUTURES

Takeaki Nakajima, Ibaragi; Tatsushiro Yoshimura, Takatsuki, and Yukihiko Karasawa, Tokyo, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 23, 1981, Ser. No. 246,382

Claims priority, application Japan, Mar. 26, 1980, 55-39220

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—334 R **3 Claims**

1. A surgical suture characterized in that a multifilamentous suture has incorporated in its interstices a copolymer of tetrafluoroethylene and the other copolymerizable monomer in an amount of about 1% to about 30% by weight based on the weight of the multifilamentous suture, the copolymer being of 100–500 mμ in mean particle size, and that the portion of the copolymer present at least in the vicinity of the surface of the suture has been baked.

4,362,163

STIFFENING CORE FOR CATHETERS

Gerd Krick, Bad Homburg, Fed. Rep. of Germany, assignor to Eduard Fresenius Chem.-Pharm. Industrie KG Apparatebau KG, Fed. Rep. of Germany

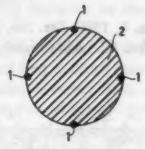
PCT No. PCT/DE79/00032, § 371 Date Nov. 28, 1979, § 102(e) Date Nov. 28, 1979

PCT Filed Mar. 28, 1979, Ser. No. 212,090

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813276

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—280 **14 Claims**



1. A stiffening core for catheters comprising a circular-section continuous strip of soft plastic core material which is provided with a plurality of evenly spaced-apart circular-section wire inserts in the outer surface of said continuous strip plastic core material and which are inserted in the outer surface of said plastic material to a depth of more than one-half of the cross-section of the wire insert.

4,362,164

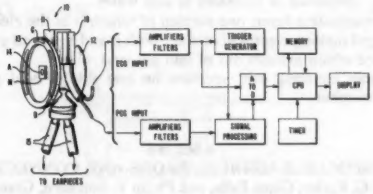
ELECTRONIC PICK-UP DEVICE FOR TRANSDUCING ELECTRICAL ENERGY AND SOUND ENERGY OF THE HEART

Michael J. Little, Tarzana, and Shi-Yin Wong, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 11, 1980, Ser. No. 186,074

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—639 **2 Claims**



1. Apparatus including a stethoscope chestpiece, comprising:

a stethoscope body portion;

a chest bell having a base secured to said body portion and having a rim defining the open end of said chest bell, said chest bell being of electrical insulating material which is non-wettable providing a hydrophobic surface on said rim;

three metal electrodes disposed on said rim, two of said electrodes being electrical current pickup electrodes which are each circumferentially dimensioned to occupy substantially one quadrant of said rim in diametrically opposite positions on said rim and the third being a ground electrode intermediate said pickup electrodes on said rim and which is smaller than said pickup electrodes, said metal electrodes each being capable of forming a redox couple of the metal and a chemical commonly found on the surface of the skin;

said body portion having a passage therein opening through the base of said chest bell;

a microphone supported in said passage; and

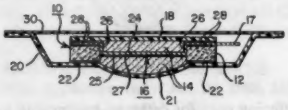
utilization circuits electrically coupled to said electrodes and said microphone and including high input impedance circuit elements individually coupled to said pickup electrodes to be controlled thereby.

4,362,165

STABLE GEL ELECTRODE

Amiram Carmon, Jerusalem, Israel; Kevin Claffey, Brooklyn, N.Y.; Daniel Lowe, Teaneck, N.J., and Lloyd Osipow, New York, N.Y., assignors to IPCO Corporation, White Plains, N.Y.

Filed Jan. 8, 1980, Ser. No. 110,449
Int. Cl.³ A61B 5/04
U.S. Cl. 128—640 **9 Claims**



1. A disposable electrode comprising:

a plastic member with an aperture in a central region thereof,

a firm, substantially uniform electrode gel in said aperture, said gel having cohesive and adhesive properties and comprising:

water,

a first polymer in weight percentage of at least 0.5 percent that has been dissolved, dispersed or hydrated in said water when said water is at an elevated temperature and that forms or can be made to form a rigid gel upon cooling,

a second polymer in weight percentage of at least 2.0 percent that is insoluble in hot water, that dissolves or hydrates on cooling, that is compatible with said first polymer and that has been combined with said first polymer and water when said first polymer is dissolved, dispersed or hydrated in said water,

a conductive layer, one portion of which is in the electrode gel making electrical contact with it and a second portion of which extends out of said gel, and

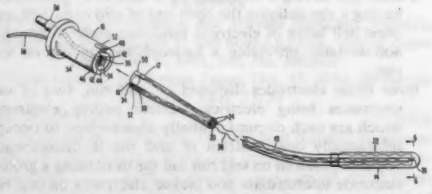
a cap covering said aperture on one side of said plastic member.

4,362,166

DISPOSABLE MEDICAL PROBE AND CONNECTOR

Alan G. Furler, Glens Falls, and Philip V. Stoddard, Greenwich, both of N.Y., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Nov. 4, 1980, Ser. No. 204,048
Int. Cl.³ A61B 5/00
U.S. Cl. 128—670 **9 Claims**



1. A probe and connector comprising:

(a) a disposable probe including a flexible tubular member having a central major lumen, said probe including a distal end and a proximal end;

(b) a condition-sensing element disposed at said distal end;

(c) a plurality of flexible conductors electrically connected to said sensing element, each of said conductors extending from said distal end to said proximal end of said probe;

(d) the proximal ends of said conductors being disposed on the inner wall of said tubular member to form first contacts near the proximal end thereof;

(e) said proximal end of said probe being formed to provide a female connector;

(f) a relatively rigid reusable male connector having a plurality of second conductors extending therethrough and adapted to be connected to an indicating instrument, the ends of said second conductors being disposed on said male connector to form second contacts, said male connector being removably connected to said female connector with said second contacts engaging respective ones of said first contacts;

(g) said first and second contacts being slidably movable relative to each other during engagement and disengagement thereof; and

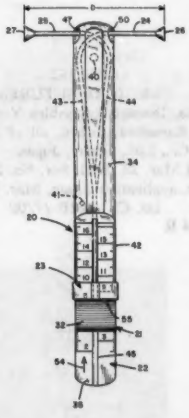
(h) said first contacts extending in a direction transverse of said second contacts, whereby the sliding movement during engagement and disengagement of said first contacts and said second contacts insures wiping action for removing any contamination from said contacts and achieving excellent electrical conduction.

4,362,167

DIAGNOSTIC MEASURING INSTRUMENT

Donald R. Nicolai, Box 415, Monticello, Minn. 55362, and Oliver D. Hanson, 2255 Viking Blvd., NW., Cedar, Minn. 55011

Filed Feb. 6, 1981, Ser. No. 231,928
Int. Cl.³ A61B 5/10
U.S. Cl. 128—778 **5 Claims**



1. A diagnostic instrument comprising, in combination:

(a) a probe assembly including a pair of elongated flexible filaments, a tongued control member to which first ends of said filaments are secured so that they extend therefrom in the same direction, and a pair of cupped tips at the other ends of said filaments; and

(b) a guide assembly having first and second apposed portions, one of said portions being extended and receiving the tongue of said control member and guiding it in a first, longitudinal direction, said portions being separately channeled to pass said filaments respectively so that they change directions by generally 90° to extend laterally

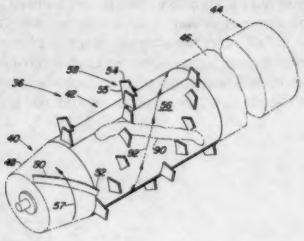
from one end of said guide assembly in opposite directions, whereby linear movement of said control member results in opposite motions of said tips along a line transverse to said guide assembly.

4,362,168

SEPARATOR FOR AN AXIAL FLOW ROTARY COMBINE

Edward J. Hengen, Bettendorf, and James H. Bassett, Davenport, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 30, 1981, Ser. No. 229,688
Int. Cl.³ H01F *12/10*
U.S. Cl. 130—27 H **17 Claims**



1. In an axial flow rotary separator for a combine having an upstream receiving portion, a downstream discharge portion and at least one intermediate processing portion, and including an at least partially foraminous housing having internal angled guide vanes, and a rotor having a body approximately coaxial with the housing, rotatably mounted within the housing for engaging crop material delivered to the receiving portion and cooperating with the housing to propel the crop material downstream through the housing in a generally helical path and process it so that a portion of the crop material passes outward through the foramina of the housing as the rotor rotates, the improvement in the rotor comprising:

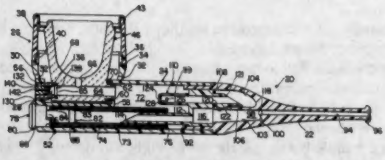
a plurality of axially and circumferentially spaced raised elements associated with the processing portion of the separator and carried by the rotor body in an array approximately defining at least a portion of a rib-like helix on the body, said helix being approximately coaxial with the rotor and of the same hand as the helical path in which the crop material is propelled through the housing, said elements having a maximum circumferential dimension not greater than about equal to their spacing within the array and the rotor having a substantially clear space on the rotor body extending a substantial distance on both sides of the array.

4,362,169

AIR FLOW DRY BOWL PIPE

Edward H. Calkins, 333 E. Main St., Gaylord, Mich. 49735

Filed Dec. 5, 1980, Ser. No. 213,725
Int. Cl.³ A24F *1/22*
U.S. Cl. 131—196 **26 Claims**



1. A smoker's pipe comprising

a hollow stem defining a first cooling chamber;

a mouthpiece having a bore therethrough on rearward end of said stem;

a bowl assembly on the forward end of said stem, said bowl assembly including

an outer bowl,

an inner bowl having a combustion chamber therein and a longitudinally extending passageway through the bottom thereof below said combustion chamber and in fluid communication therewith, and

means coupling said inner and outer bowls together so as to establish an annular air space therebetween all along the lengths thereof for the flow of cooling air around said inner bowl;

means for supplying fresh air to the forward end of said passageway;

means for establishing a smoke flow path between said passageway and said first cooling chamber; and

means for establishing a smoke flow path between said first cooling chamber and said mouthpiece bore.

4,362,170

TOBACCO CURING METHOD

Gus D. Keritsis, Richmond, Va.; Gordon H. Bokelman, Boulder, Colo., and Dewitt T. Gooden, III, Barnwell, S.C., assignors to Philip Morris, Incorporated, New York, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,493
Int. Cl.³ A24B *3/12, 15/20, 15/28*
U.S. Cl. 131—309 **1 Claim**

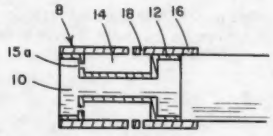
1. A method of artificially curing mature green tobacco from which juices have been expressed comprising contacting the tobacco having a moisture content of at least 10% OV with sulfur dioxide gas, allowing the sulfur dioxide treated tobacco to brown and drying the browned tobacco.

4,362,171

CIGARETTE FILTER

Robert R. Johnson, Louisville, and Daniel V. Cantrell, Prospect, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 21, 1980, Ser. No. 208,951
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 **6 Claims**



1. A filter rod for a cigarette comprising:

a porous filter rod of cylindrical configuration;

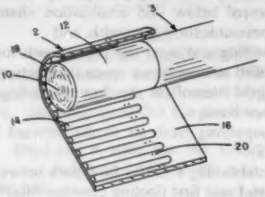
a smoke impervious wrapper extending longitudinally along said rod from one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod, said wrapper having at least one longitudinally extending groove embedded into the filter rod and that portion of the wrapper defining the groove remaining smoke impervious, said groove having an opening in one end into the filter rod, said groove extending a distance less than the length of the filter rod intermediate of both ends; and,

tipping material extending longitudinally of and circumscribing said wrapper, said tipping material being air pervious and permitting ventilating air flow therethrough into said groove, said ventilating air being the only fluid flowing through said groove when the filter is used in combination with a cigarette during normal smoke draw.

4,362,172
CIGARETTE FILTER

Robert R. Johnson, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 1, 1980, Ser. No. 211,491
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 8 Claims

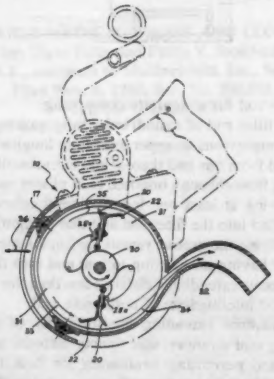


1. A filter for a cigarette comprising:
a porous filter rod of cylindrical configuration;
a smoke impervious wrapper extending longitudinally along said rod from one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod;
tipping material extending longitudinally of and circumscribing said wrapper, said tipping material being provided with means permitting ventilating air flow therethrough; and,
spacing means disposed between and non-unitary with said wrapper and said tipping material, said spacing means including a plurality of spaced parallel longitudinal members extending a preselected distance therealong defining ventilating air channels between said wrapper and said tipping material, ventilating air being the only fluid flowing through said channels when the filter is used in combination with a cigarette tobacco column during smoke draw.

4,362,173
CASHMERE COMBING MACHINE

Daryl J. Blinman, Glenfield, Australia, assignor to Minister for Public Works for the State of New South Wales, Sydney, Australia

PCT No. PCT/AU80/00042, § 371 Date Mar. 17, 1981, § 102(e) Date Mar. 17, 1981, PCT Pub. No. WO81/00339, PCT Pub. Date Feb. 19, 1981
PCT Filed Aug. 1, 1980, Ser. No. 247,561
Claims priority, application Australia, Aug. 3, 1979, PD9820
Int. Cl.³ A45D *1/00*
U.S. Cl. 132—9 13 Claims

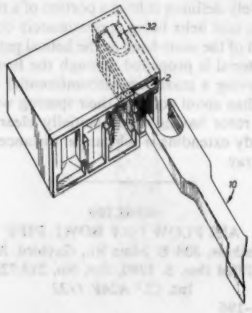


1. An apparatus for the removal of hair from an animal comprising driven comb means for collecting the hair and a housing for the comb means and within which the comb means is arranged to be driven, the housing having an inlet which exposes the comb means so that it can be moved through the hair of the animal, an outlet for the discharge of hair collected from the animal and means permitting connection of the outlet to a suction means so that when in use the suction means creates an air flow which is applied to the collected hair to facilitate its removal from the comb means; the comb means comprising at least one comb which in turn comprises a comb spine to which is attached a plurality of fingers which are each tapered convergently towards tips thereof, each finger being bent part way along its length such that in use the tip of each finger is inclined in the direction of travel of the comb through the hair of the animal, characterised in that the or each said comb is mounted on a rotatable hub member in such a way that the or each comb is substantially freely pivotally displacable through an arc of movement for all rotary positions of the hub member, the suction means being arranged to cause a flow of air past the or each said comb after it has been moved through the hair of the animal to remove therefrom any hair collected by it.

4,362,174
TOOTHBRUSHES

Hugh W. B. Baker, Beaconsfield; Charles C. Packham, Wokingham, and Norman C. Welsh, Bradfield, all of England, assignors to The Gillette Company, Boston, Mass.

Filed Jan. 22, 1981, Ser. No. 227,452
Claims priority, application United Kingdom, Jan. 24, 1980, 8002410; Dec. 18, 1980, 8040554
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—84 R 17 Claims



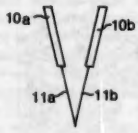
1. A toothbrush system comprising
a handle,
a plurality of exchangeable toothbrush heads, and
a container for said heads,
said container having a plurality of compartments, each of said compartments being adapted to releasably retain one of said heads, each of said compartments having an opening therein,
said handle being insertable through said opening to engage said head in said compartment and being withdrawable from said compartment with said head secured to said handle.

4,362,175

DANDRUFF REMOVER COMBS

James P. Garvey, 11 Andersonstown Rd., Belfast, Northern Ireland (BT11 9AF)

Continuation of Ser. No. 828,975, Oct. 28, 1977, abandoned.
This application Apr. 28, 1980, Ser. No. 144,508
Claims priority, application United Kingdom, Aug. 31, 1977, 36425
Int. Cl.³ A45D 24/42
U.S. Cl. 132—119 9 Claims



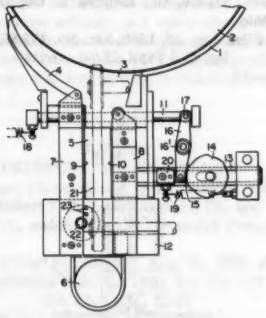
1. A dandruff remover device including two inclined combs connected to a holder for a blade having a non-cutting edge, which blade is arranged to be extended against spring pressure into a cleaning position between the teeth of the combs.

4,362,176

DEVICE FOR ADJUSTING COIN PASSAGE OF COIN HANDLING MACHINE

Kenkichi Watanabe, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 184,779
Claims priority, application Japan, Dec. 25, 1979, 54-179749[U]
Int. Cl.³ G07D 9/00
U.S. Cl. 133—1 A 5 Claims



1. In a device for adjusting a coin passage of a coin handling machine so as to adapt the width of the coin passage for a certain sort of coins, wherein two coin selection guides defining the coin passage are moved relative to each other, the improvement which comprises:

two slider means connected respectively to said two coin selection guides and having engagement portions;

a link pivoted at a point substantially centrally of a longitudinal extension thereof and having ends engageable with engagement portions of respective ones of said slider means;

means for resiliently urging said ends of said link to engage said engagement portions of each of said slider means;

cam means abutting against one of said ends of said link for moving the same by a pre-set distance in response to a change in diameter of coins to be passed through said coin passage;

whereby said slider means are slidably moved in directions reverse to each other by the same distance so as to move the associated coin selection guides to increase or decrease the width of said coin passage without changing the longitudinal center line of the coin passage; and

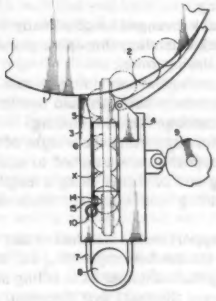
stopper means mounted on one of said coin selection guides for stopping the movement of coins at any desired time, said stopper means comprising a rotatable member having a semi-circular cut-off section, the diametrically extending edge of said semi-circular cut-off section being selectively aligned with an edge of the associated coin selection guide defining one of the walls of the coin passage for passage of coins and being positionable skewed to the coin selection guide edge to stop movement of coins.

4,362,177

COIN COUNTING APPARATUS FOR COIN HANDLING MACHINE

Katusuke Furuya, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,729
Claims priority, application Japan, Dec. 29, 1979, 54-182588[U]
Int. Cl.³ G07D 9/04
U.S. Cl. 133—8 R 5 Claims



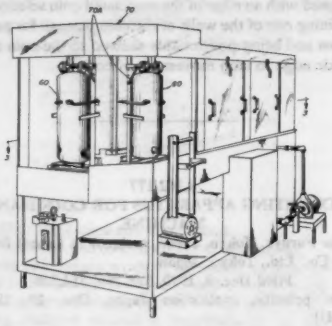
1. A coin counting system comprising: a coin path for guiding a series of coins to be counted therealong; conveying means juxtaposed to said coin path for conveying the coins in said coin path; light emitting means disposed at a downstream portion of said coin path for emitting a light; pre- and post-sensors juxtaposed to each other upstream and downstream in the coin conveying direction and arranged to receive the light emitted from said light emitting means and to be at least included temporality within the generally triangular space, which is defined by the inner wall of said coin path and by the facing circumferential portions of the two coins being conveyed adjacent to each other along said coin path, thereby generating respective signals; a generator circuit made receptive of the signals of said pre- and post-sensors for generating an addition signal, when said two coins pass in the normal order from said pre-sensor to said post-sensor, and a subtraction signal when said two coins pass in the abnormal order from said post-sensor to said pre-sensor; means made responsive to the addition and subtraction signals of said generator circuit for generating a count signal in response to the addition signal and for generating no count signal by the addition signal subsequent to the subtraction signal to the subtraction signal and a counter for counting up the number of said coins, when it receives said count signal, whereby the coin having been counted can be prevented from being erroneously counted up again even if it is conveyed backward.

4,362,178

FIGAL WASHER SYSTEM

Robert S. Frye, Decatur, and Bernard M. Boehnlein, Sr., Atlanta, both of Ga., assignors to Coca-Cola Company, Atlanta, Ga.

Filed Mar. 18, 1981, Ser. No. 245,060
Int. Cl.³ B08B 9/08
U.S. Cl. 134—83 23 Claims



12. A system for washing a plurality of containers comprising

an outer housing;

a horizontal track arranged longitudinally within said housing, said track extending through a plurality of washing, rinsing, and drying zones;

a plurality of carriage means riding on said track for carrying said containers through said washer, each of said plurality of carriage means including,

base means for supporting the weight of a said container

vertical support means attached to said base means for supporting said container along a length dimension and for preventing said container from falling in a first direction,

transverse support means attached to said vertical support means for transversely supporting and container and for preventing said container from falling in a second direction, different than said first direction, and

valve means attached to said base means and being connected to a water source means, said valve means on said base means being connected to a valve means on one of said containers when said container is loaded onto said carriage means; and

means for moving said plurality of carriage means through said plurality of washing, rinsing, and drying zones of said washer.

4,362,179

METHOD AND APPARATUS FOR CONTROLLING INK VISCOSITY

John MacPhee, Rowayton, and William W. Barton, Stamford, both of Conn., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Filed Sep. 26, 1980, Ser. No. 191,290
Int. Cl.³ G05D 11/00
U.S. Cl. 137—3 4 Claims

1. A method of maintaining the viscosity of printing ink at a predetermined level by monitoring the density of printing ink comprising:

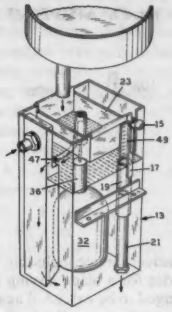
(a) circulating printing ink to and from a printing press and a source of supply;

(b) monitoring the circulating printing ink in a control means which includes a tank adapted to receive the printing ink;

(c) maintaining in said tank a hydrometer and associated stem, said hydrometer having a predetermined weight range and said stem having a predetermined diameter range necessary to give the predetermined viscosity range of the printing ink;

(d) maintaining a supply of solvent in fluid communication with respect to said tank;

(e) maintaining valve means in operative relationship with said hydrometer and stem and said supply of solvent; and



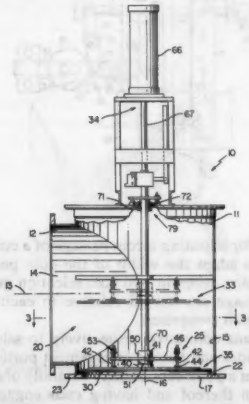
(f) maintaining said hydrometer so that said hydrometer opens said valve means when the printing ink density goes above a predetermined level to allow solvent to enter said tank and said hydrometer closing said valve means when the density of the printing ink reaches the predetermined level to thereby maintain the viscosity of the printing ink at a predetermined level.

4,362,180

POPPET VALVE AND METHOD OF ASSEMBLING SAME

Paul P. Frisch, Skokie, Ill., assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 20, 1980, Ser. No. 179,859
Int. Cl.³ F16K 25/00, 43/00
U.S. Cl. 137—15 21 Claims



1. In a poppet valve including a valve body defining an internal chamber and having inlet and outlet passages communicating with said chamber, and closure means disposed within said chamber and adapted to close a selected one of said inlet and outlet passages; the improvement wherein said closure means comprises, in combination, means defining an annular sealing edge circumferentially of said selected one of said inlet and outlet passages so that said sealing edge lies in a plane substantially perpendicular to the axis of said selected passage,

a valve disc having an annular portion adapted to engage said annular sealing edge in fluid-tight sealing relation therewith, a backup plate fixed generally concentrically to said disc and defining a bearing surface generally centrally thereon, a spring plate defining a domed surface thereon, means supporting said spring plate internally of said chamber so as to lie in a plane substantially perpendicular to said axis of said selected passage in generally coaxial relation with said backup plate, and means cooperative with said backup plate and said spring plate for biasing them toward each other so that said domed surface engages said bearing surface in a manner to enable relative movement between said backup plate and said spring plate while maintaining relatively fixed rotational relation therebetween, said spring plate support means including means operative to move said backup plate and spring plate between a first position wherein said valve disc is spaced from said sealing edge to enable flow through said selected passage and a second position wherein said annular portion of said valve disc engages said sealing edge in fluid-tight sealing relation therewith.

16. A method of assembling a poppet valve which includes a valve body defining an internal chamber and having inlet and outlet passages communicating with said chamber, said method comprising the steps of inserting means within said chamber to define an annular sealing edge circumferentially of a selected one of said inlet and outlet passages so that said sealing edge lies in a plane substantially perpendicular to the axis of said selected passage, fixing a backup plate generally concentrically to a valve disc so as to establish an annular sealing edge on said disc of a size sufficient to engage said annular sealing edge, said backup plate defining a bearing surface generally centrally thereon, interconnecting said backup plate to a spring plate, said spring plate defining a domed surface thereon and being interconnected to said backup plate in a manner to bias said domed surface against said bearing surface and enable relative movement between said backup plate and said spring plate while maintaining relatively fixed rotational relation therebetween, and mounting said valve disc, backup plate and interconnected spring plate within said chamber so that said spring plate is movable between a first position wherein said valve disc is spaced from said sealing edge to enable flow through said selected passage and a second position wherein said annular portion of said valve disc engages said sealing edge in fluid-tight sealing relation therewith.

4,362,181

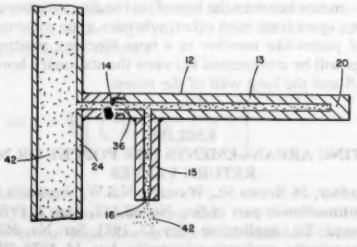
PRESSURE RELIEF SYSTEM

Lester G. Massey, Chagrin Falls, Ohio; David A. George, Park Forest, Ill.; Robert I. Brabets, Lombard, Ill., and William A. Abel, Joliet, Ill., assignors to CNG Research Company, Cleveland, Ohio

Continuation of Ser. No. 935,992, Aug. 22, 1978, abandoned. This application Mar. 12, 1980, Ser. No. 129,655

Int. Cl.³ F17C *13/12*

U.S. Cl. 137—68 R **4 Claims**



1. In a system for processing a high solids content coal slurry at high temperature and pressures, said processing system comprising a reaction vessel and pumping system which safely withstand a first predetermined pressure level, the improvement of an emergency pressure relief system, comprising, in combination:

a pressure container having first and second elongated tubes, said first elongated tube having a passageway, an open end, and a closed end, the open end of said first elongated tube defining a solitary inlet from the reaction vessel into the pressure container, said second elongated tube having a passageway with exposed open ends and extending generally transversely from the first elongated tube, the first open end of the second elongated tube communicating with the passageway of the first elongated tube to define a solitary outlet from said first elongated tube, the second open end of the second elongated tube defining a solitary outlet from the pressure container;

means at the open end of said first elongated tube for connecting the pressure container to the reaction vessel;

means for sealing the solitary inlet to the pressure container, said means for sealing including means rupturable into fragments which are projected into the pressure container when the pressure in the reaction vessel is greater than the first predetermined pressure; and

a flow restrictor in the second elongated tube at the second open end thereof for restricting flow through the outlet from said pressure container to a predetermined rate of flow;

the location of communication between the first open end of the second elongated tube and the passageway of the first elongated tube being adjacent the open end of the first elongated tube such that said location divides the passageway of the first elongated tube into a first passageway segment and a second passageway segment, said first passageway segment being between said sealing means and said solitary outlet from said first elongated tube, said second passageway segment being between said solitary outlet from said first elongated tube and said closed end of said first elongated tube, said second passageway segment defining fragment retention means which is removed from the solitary outlet of said first elongated tube for (1) capturing said fragments by providing that the momentum of rupture of the sealing means propels said fragments along the first elongated tube past the solitary outlet from the first elongated tube and into the fragment retention area, and (2) retaining the fragments there while slurry flows through the pressure container; and

said pressure container, said sealing means and said flow restrictor defining controlled depressurization means for: (1) safely and suddenly decreasing the slurry pressure within the processing system below said first predetermined pressure (2) to a level above a second predetermined level for a predetermined interval of time that prevents thermal shock and agglomeration of the coal slurry in the processing system while (3) minimizing the likelihood that said emergency pressure relief may itself become obstructed and (4) maintaining the integrity of the reaction vessel and pumping system until said processing system can be cleared of coal slurry.

4,362,182

NOZZLE FORCE FEEDBACK FOR PILOT STAGE FLAPPER

John R. Sjolund, Arden Hills, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 14, 1981, Ser. No. 225,081

Int. Cl.³ G05D *16/00*

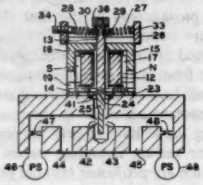
U.S. Cl. 137—85 **12 Claims**

1. A pilot stage comprising:

magnetic torque motor means having an output torque in response to an input current;

a flapper operated by said magnetic torque motor means and responsive to said output torque, said magnetic torque motor means comprising permanent magnet means contributing to a magnetic spring rate applied to said flapper

and centering spring means for centering said flapper when little or no fluid supply pressure is applied to said pilot stage, said centering spring means contributing to a mechanical spring rate applied to said flapper, said permanent magnet means being magnetized at a point where the resultant spring rate between said magnetic spring rate and said mechanical spring rate is small but enough to center said flapper under little or no supply pressure conditions, and,



nozzle means responsive to the output torque applied to said flapper for providing an output pressure proportional to the input current, said nozzle means including at least one nozzle having a size sufficiently large to swamp out the resultant spring rate applied to said flapper so that said nozzle means applies a feedback torque to said flapper sufficient by itself to substantially balance motor torque.

4,362,183

SPRING LOADED SAFETY VALVE

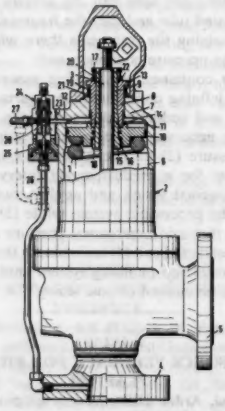
Herbert Richter, Weinheim, and Karl Schaaf, Mannheim, both of Fed. Rep. of Germany, assignors to Bopp & Reuther GmbH, Mannheim, Fed. Rep. of Germany

Filed Jun. 23, 1980, Ser. No. 162,397

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926522

Int. Cl.³ F16K *17/06*

U.S. Cl. 137—489 **9 Claims**



1. A spring-loaded safety valve, particularly of small and medium dimensions, comprising a valve housing having an inlet port, an outlet port and an upper region functioning as an additional loading cylinder; a valve seat in said valve housing interposed between said ports; a valve member movable in said housing to and from a position in which it engages said valve seat; spring means permanently biasing said valve member towards said valve seat; single means arranged to superimpose upon the biasing force of said spring means an additional force acting upon said valve member in direction of said valve seat while said valve member is in engagement therewith, and to relieve said additional force first before the pressure in said valve reaches a predetermined valve-opening level, said single means comprising piston means engaging said spring means and movable within said additional loading cylinder so as to apply said additional force to said spring means; limiting means for limiting the travel of said piston means, said limiting means comprising an inner adjustable sleeve having an abutment limiting the additional loading of said spring means by said piston means by directly contacting said piston means, and an outer adjustable sleeve arranged concentrically about said inner sleeve and having an abutment limiting the travel of said piston means by directly contacting said piston means thereby limiting the lessening of the additional force and setting the predetermined valve-opening level; and relieving means to relieve said additional force just before the pressure in said valve reaches a predetermined valve-opening level.

4,362,184

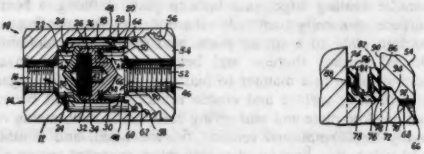
VALVE WITH SPRING BIASED SEAL

Iakovos Marabeas, 50A Hudson View A, Upper Nyack, N.Y. 10960

Filed Jan. 28, 1980, Ser. No. 116,045

Int. Cl.³ F16K *15/02*

U.S. Cl. 137—516.29 **9 Claims**



1. A valve structure comprising:

a valve body with an inlet and outlet connected by a fluid passing bore, having an area of reduced cross-section adjacent the outlet;

a piston-like member movable in said bore towards a fixed bore endwall extending in a plane perpendicular to the axis of movement of said piston-like member;

said piston-like member formed with a conical endwall movable into a mating conical portion in the bore endwall to block same;

a circumferential recess in said piston-like member adjacent the conical endwall, said recess having two opposed walls, one wall of which is short and the other long, the short wall movable into the conical portion of the bore;

a resilient easily bent in elastic sealing member in said recess, said sealing member circumferentially surrounding said piston-like member, and formed with spaced legs extending above the short wall, and shorter than the long wall of said recess; and

elastic means between the legs of said sealing member urging same apart from each other, whereby upon movement of said piston-like member to a bore blocking position, the legs will be compressed between the stationary bore endwall and the long wall of the recess.

4,362,185

SEATING ARRANGEMENTS FOR POPPET OR NON RETURN VALVES

Max Kadner, 36 Brown St., Waverly, N.S.W., Australia (2024)

Continuation-in-part of Ser. No. 63,117, Aug. 2, 1979, abandoned. This application May 13, 1981, Ser. No. 263,352

Claims priority, application Australia, Aug. 14, 1978, PD5475

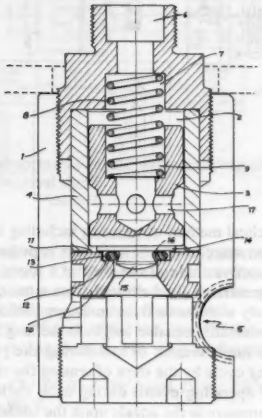
Int. Cl.³ F16K *15/02*

U.S. Cl. 137—516.29 **3 Claims**

1. A poppet valve or non-return valve including:

(i) a valve chamber,

(ii) an annular valve seat,
(iii) a valve member movable in the valve chamber and having an O-ring retainer chamber and having an O-ring retainer member projecting towards the annular valve seat, and
(iv) an elastomeric O-ring on the retainer member to provide a seal between the valve member and the annular valve seat when the valve is in its closed position,
and wherein the O-ring retainer member has:



(v) a head portion remote from the valve member, and,
(vi) a groove between the head portion and the valve member which comprised by:
(a) a first conical portion extending inwardly from the head portion and having a cone angle no greater than about 25°.
(b) a second conical portion spaced inwardly from the first conical portion and having a cone angle of at least about $(90-2\gamma_E)$ where γ_E is given by the formula:

$$\text{COT } \gamma_E = \frac{\pi}{4}\left[\left(\frac{R_o}{R_o - x_1}\right)^2 + 1\right]$$

wherein
R_o is the cross sectional radius of the O-ring when the valve is open, and,
X_1 is the reduction in cross-sectional radius of the O ring when the valve is closed.
(c) a curved zone between the two conical portions which provides a smooth transition therebetween, the incremental value of the angle $(90°-2\gamma_E)$ of the curved zone being given by the formula

$$\cot \gamma = \frac{\pi}{4}\left[\left(\frac{R_o}{R_o - X}\right)^2 + 1\right]$$

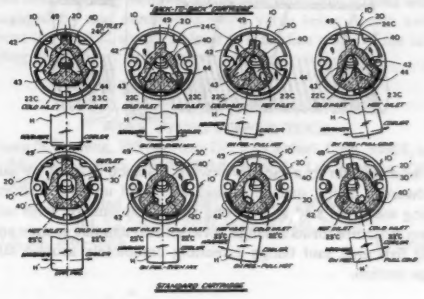
wherein
R_o has the above meaning and,
X is the reduction in the cross-sectional radius of the O-ring at the incremental conical portion of the curved zone
so that the O-ring retainer member does not interfere with or constrain the O-ring during its deformation sequence as the valve closes and opens.

4,362,186

SANITARY FITTING

Richard G. Parkison; Armin O. Fischer, both of Louisville, Ky., and John C. Kaussner, Easton, Conn., assignors to American Standard Inc., New York, N.Y.

Filed Feb. 11, 1981, Ser. No. 233,419
Int. Cl.³ F16K 11/06
U.S. Cl. 137—625.17 **4 Claims**



1. A sanitary fitting adapted to be mounted in back-to-back relation to a standard sanitary fitting on the opposite side of a partition wall with the handle operation unchanged, without requiring cross-over connections of the cold and hot water lines, said fitting comprising:
a stationary valve plate having first and second water inlet openings for conducting cold and hot water respectively therethrough and an outlet opening, said plate having a polished surface defining a valve seat;
a shiftable valve plate having means for effecting an internal reversal of water flow through said sanitary fitting, said means including a bifurcated recess formed therein and defining first and second arm sections, for communicating with said first and second water inlet openings respectively;
said shiftable valve plate having a polished surface and being mounted in face-to-face contact with said polished surface, of said stationary valve plate effecting a watertight seal therebetween; and
a valve actuator means rotatably mounted on said sanitary fitting, and coupled to said shiftable valve plate, said actuator means being moveable along the vertical axis of said sanitary fitting for moving said shiftable valve plate rectilinearly so that at least one of said arm sections of said bifurcated recess uncovers said corresponding water inlet opening of said stationary valve plate and, when rotated, said other arm section of said bifurcated recess uncovers said other corresponding water inlet opening of said stationary valve plate.

4,362,187

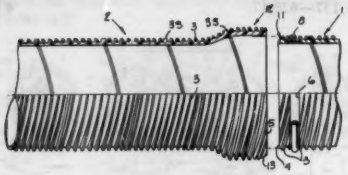
SPIRALLY-FORMED THERMOPLASTIC TUBE

Allan Harris, Newport Beach, and Lemuel H. Huff, Anaheim, both of Calif., assignors to Manville Service Corporation, Denver, Colo.

Filed Aug. 5, 1980, Ser. No. 175,473
Int. Cl.³ F16L 9/16
U.S. Cl. 138—109 **11 Claims**

1. A pipe section formed of a spirally wound thermoplastic ribbon, said ribbon including first and second mating edges having mating shapes which, when joined together in spiral fashion form a substantially imperforate seam structure, and between said first and second mating edges, said ribbon includes a web which is generally flat in cross section and extends between said mating edges, and at least one upstanding reinforcing rib extending parallel to said first and second mating edges and projecting outward a substantial distance from

the outwardly facing surface of said web, said pipe section further includes a first end and a second end, an annular groove spaced a uniform distance from said first end and extending entirely around said pipe section, said annular groove extending from the outer circumference of said pipe as defined by said



at least one rib to a radially inward distance defined by said outwardly facing surface of said web, said uniform distance being such that said at least one rib in combination with said seam structure forms a flange between said annular groove and said first end, said flange extending completely around said pipe section.

4,362,188

ROTARY DOBBY

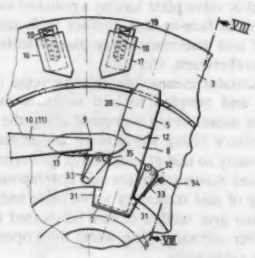
Paul Surkamp, Kempen-St. Hubert, and Josef Brock, Viersen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Dec. 30, 1980, Ser. No. 221,465

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001310

Int. Cl.³ D03C *1/12*

U.S. Cl. 139—76 **8 Claims**



1. In a rotary dobby having a wedge coupling between a drive shaft and an eccentric device for a harness movement, the wedge being displaceably mounted in a radially extending recess in an eccentric disc mounted in a crank arm and couplable and uncouplable in accordance with a pattern in an axially extending groove of the drive shaft at two diametrically opposite coupling locations by a shift rod which is controlable in accordance with the pattern and engages with a coupling member of the shift rod into a groove of the wedge which is open in an axial direction of the drive shaft, the improvement comprising

a spring-biased locking pawl means for locking the wedge in a coupled position thereof on the eccentric disc against displacement,

said locking pawl means for being displaceable with the coupling member of the shift rod into a position which permits uncoupling of the wedge.

4,362,189

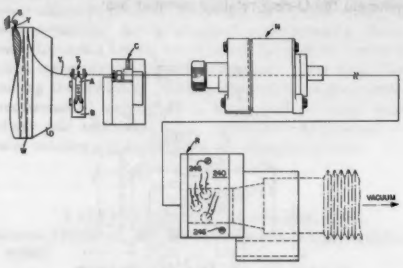
FLUID WEFT INSERTION LOOM MONITORING SYSTEM

Charles W. Brouwer, East Greenwich, R.I., and Larry C. Cowan, York, S.C., assignors to Leesona Corporation, Warwick, R.I.

Filed Jan. 7, 1981, Ser. No. 223,203

Int. Cl.³ D03D *51/18*

U.S. Cl. 139—336 **8 Claims**



1. In a cyclical method of weaving including in each cycle a weft insertion stage in which weft yarn is propelled from one side to the opposite side of the shed of a loom by means of a stream of pressurized fluid emitted from a nozzle while being simultaneously withdrawn from an accumulated supply at said one side substantially equal in length to the length of yarn to be inserted, the improvement of monitoring the performance of each weaving cycle by the steps of sensing the occurrence of a sequence of operating events during each cycle including an increase in pressure in the nozzle upon the emission of the fluid stream therefrom, the exhaustion of the accumulated yarn supply, and the arrival of the leading yarn end at the opposite shed side; simultaneously activating a plurality of timers corresponding to the plurality of functions so sensed at a common starting time in the weaving cycle prior to the weft insertion stage, terminating the operation of each counter only at the instant of the occurrence of the corresponding operating event being sensed while holding the elapsed time at such termination on each timer, and resetting said plurality of timers at the end of each cycle when the arrival of the yarn at the opposite shed side has been sensed.

4,362,190

METHOD OF SENSING ABNORMALITY OF WEFT DETECTING DEVICE IN LOOM

Akio Arakawa, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Oct. 31, 1980, Ser. No. 202,764

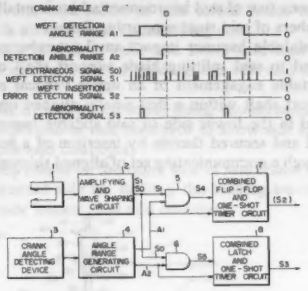
Claims priority, application Japan, Nov. 7, 1979, 54-144647

Int. Cl.³ D03D *51/34*

U.S. Cl. 139—370.2 **4 Claims**

1. In a loom equiped with a weft detecting device for setting a predetermined crank angle range within one revolution of the crank and for detecting the presence of a weft within the set interval, a method of sensing an abnormality in the weft detecting device of said loom, which comprises the steps of regarding, as an abnormal signal, a signal which is generated

by the weft detecting device within a predetermined crank angle range excluding the weft detection angle range, and


CRANK ANGLE
WEFT DETECTION ANGLE RANGE A1
ABNORMALITY DETECTION ANGLE RANGE A2
(EXTRANEOUS SIGNAL S0)
WEFT DETECTION SIGNAL S1
WEFT INSERTION ERROR DETECTION SIGNAL S2
ABNORMALITY DETECTION SIGNAL S3
AMPLIFYING AND WAVE SHAPING CIRCUIT
COMBINED FLIP-FLOP AND ONE-SHOT TIMER CIRCUIT
CRANK ANGLE DETECTING DEVICE
ANGLE RANGE GENERATING CIRCUIT
COMBINED LATCH AND ONE-SHOT TIMER CIRCUIT

detecting an abnormality in the weft detecting device on the basis of the abnormal signal.

4,362,191

WOVEN SLIDE-FASTENER STRINGER

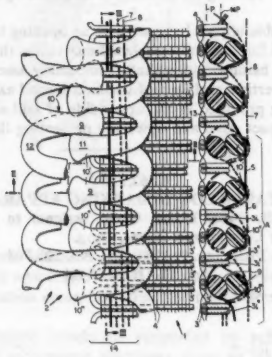
Alfons Fröhlich, and Karl Griessbaum, both of Essen, Fed. Rep. of Germany, assignors to Opti Patent-, Forschungs-und Fabrikations AG, Riedern-Allmeind, Switzerland

Filed Oct. 9, 1980, Ser. No. 195,000

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941067

Int. Cl.³ D03D *1/00*; A44B *19/40, 19/34*

U.S. Cl. 139—384 B **2 Claims**



1. In a slide fastener having a stringer half formed with a woven ground-weave tape and a continuous monofilament coupling elements formed by weaving and woven into said tape during the weaving thereof and wherein said tape has a ground weave comprising ground warp yarns forming warp pockets receiving ground-double wefts reaching to a longitudinal edge of the tape and formed by a continuous ground weft yarn, said coupling element comprising a multiplicity of double-weft coupling members spaced apart along said edge with each coupling member having a coupling head projecting beyond said edge, and a pair of shanks having superposed projections in a slide fastener plane overlying a portion of said tape adjacent said edge with connecting parts bridging the shanks of successive coupling members, the improvement wherein said coupling element is secured to said tape on said portion by a plurality of connecting warp yarns and such that the shanks of each coupling member form a double weft interwoven with said connecting warp yarns and respective double wefts underlying the shanks of each coupling member while interstitial ground double wefts lie between the coupling members, said connecting warp yarns being offset longitudinally from one another with a stagger of two picks and each overshooting both shanks of a pair of coupling members, overshooting both shanks of the next coupling member and undershooting both shanks of a further coupling member in a repeating pattern along the length of said tape, each connecting warp yarn passing under an interstitial ground a double weft between each of said pairs of coupling members and the successive next coupling member, the interstitial double ground wefts engaged by said connecting warp yarns being drawn away from the ground weave at least to a median plane of the coupling element.

4,362,192

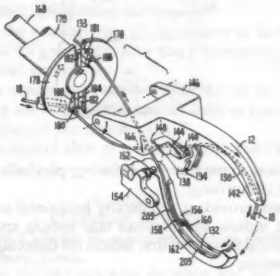
WIRE TYING POWER TOOL

Donn B. Furlong, 185 McNear Dr., San Rafael, Calif. 94901, and Marvin M. May, 10401 Wilshire Blvd., Los Angeles, Calif. 90024

Filed Mar. 5, 1981, Ser. No. 240,964

Int. Cl.³ B21F *7/00, 9/02, 11/00, 23/00*

U.S. Cl. 140—93.6 **15 Claims**



1. A tool for binding with wire reinforcing bars used in concrete structures, said tool comprising:

(a) a pair of jaws relatively movable toward and away from each other between open and closed positions for insertion around two or more reinforcing bars,

(b) means for selectively moving said jaws between their open and closed positions,

(c) said jaws having grooves formed therein in the configuration of a loop when the jaws are in their closed position,

(d) means for feeding a predetermined length of wire having a free end into the grooves when the jaws are in their closed position,

(e) wire-retaining means on the jaws for blocking the exit of the wire from the grooves during the feeding of the wire into the grooves in the jaws,

(f) means for cutting the wire after it has been fed all the way into the grooves in the jaws, and

(g) means for twisting the cut ends of the wire to form a tie for binding the reinforcing bars.

8. A tool for binding with wire reinforcing bars used in concrete structures, said tool comprising:

(a) a pair of jaws relatively movable toward and away from each other between open and closed positions for insertion around two or more reinforcing bars,

(b) means for selectively moving said jaws between their open and closed positions,

(c) said jaws having grooves formed therein in the configuration of a loop when the jaws are in the closed position,

(d) a pair of relatively rotatable members forming a pair of openings therebetween,

(e) means for feeding a predetermined length of wire having a free end through one of the openings between said relatively rotatable members, into the grooves in the jaws

while the jaws are closed, and the free end of the wire through the other of said openings between the relatively rotatable members,

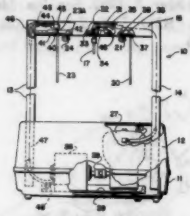
(f) means for causing one of said relatively rotatable members to rotate relative to said other member to close the openings therebetween, said one member having a cutter thereon to cut the wire and to twist the cut ends of the wire into tie for binding the reinforcing bars upon further rotation of said members.

4,362,193

INFLATING APPARATUS FOR PLAYBALLS

William A. Erdos, Peninsula, and Edward J. Stropkay, Chesterland, both of Ohio, assignors to Eagle Rubber Co., Inc., Ashland, Ohio

Filed Sep. 8, 1980, Ser. No. 185,288
Int. Cl.³ B65B *31/00, 3/28*
U.S. Cl. 141—94 **6 Claims**



1. Inflation apparatus for inflating playballs to predetermined size comprising:

(a) a frame providing a generally horizontal support having a first indicia and playball size indicia spaced apart at opposite sides of said first indicia for denoting playball size increments;

(b) inflator means carried by said frame in position indicated by said first indicia to receive a playball for inflation;

(c) playball size determining means carried by said frame support and selectively movable along said frame support, and including means fixing the spacially separated and adjusted positions of said size determining means for predetermining the final inflated size of the playball prior to being inflated;

(d) a source of inflating gas connected to said inflator means;

(e) first control means carried by said frame and initially operable upon a playball received on said inflator means for admitting the gas from said source for inflating the playball to a size for engaging said size determining means; and

(f) second control means for stopping the admission of gas upon the playball engaging said size determining means.

4,362,194

MANUALLY MOBILE FIREWOOD LOG SPLITTER

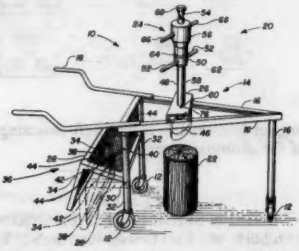
Jack O. Lawson, R.D. #4, Ephrata, Pa. 17522

Filed Jan. 29, 1981, Ser. No. 229,453
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 R **10 Claims**

1. A manually mobile firewood log splitter adapted to be displaced from one use location to another by means of a caster mounted rigid supporting frame structure comprised of at least two interconnected horizontally and vertically disposed members provided with a rearwardly projecting set of horizontally spaced handles, said manually mobile firewood log splitter comprising in combination:

(a). a slidable hammer splitter assembly having an interchangeable splitting blade connectably assembled at the lower vertical end of a splitting blade support shaft member provided with an integral vertical displacement guide means therefor, said member and said guide means being vertically moveable perpendicularly through a shaped keyway opening within a structural platform member horizontally disposed in transversely connected assembly between two of said interconnected horizontally disposed members of said rigid supporting frame,

(b). a slidable hammer impact anvil interchangeably connected to said splitting blade support shaft member by insertable engagement of an upper vertical end of said support shaft within a first axially aligned opening provided in the lower side of said slidable hammer impact anvil and secured therein by insertion of a retaining pin through a communicating set of aligned sidewall openings



therefor provided respectively within said slidable hammer impact anvil and said upper vertical end of said splitting blade support shaft member whereby said support shaft communicates vertically downwardly from said anvil through said structural platform member shaped keyway opening to said interchangeable splitting blade, and

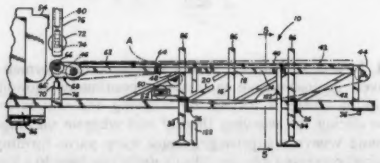
(c). a slidable impact hammer with an opening therethrough adapted for vertically displaced movement thereof upon a slidable hammer guide shaft connectably assembled at the lower vertical end thereof within a second axially aligned opening provided in the upper side of said slidable hammer impact anvil and upwardly projecting therefrom.

4,362,195

PORTABLE LOG DEBARKING APPARATUS

Louis F. Hill, Sweet Home, Oreg., assignor to Pacific Rim Equipment Corp., Sweet Home, Oreg.

Filed Jan. 9, 1981, Ser. No. 223,701
Int. Cl.³ B27L *1/06*
U.S. Cl. 144—242 R **16 Claims**



10. A portable log debarking apparatus comprising

(a) an elongated infeed frame having road engaging wheel support means at one end thereof,

(b) a hitch on the other end of said frame arranged to be connected to a pulling vehicle for movement of the frame to a site of logs to be debarked,

(c) a power driven debarking unit on said frame adjacent one end,

(d) a powered driven conveyor on said infeed frame operating toward said debarking unit,

(e) said conveyor being arranged to feed logs deposited thereon longitudinally into said debarking unit,

(f) a longitudinal feed segment at the end of said infeed frame adjacent said debarking unit,

(g) said feed segment having opposite ends and having lateral pivotal connection to said infeed frame at its end which is away from said debarking unit,

(h) means arranged to raise and lower said feed segment around its pivot end for guiding logs into said debarking unit,

(i) one side of said infeed frame being unobstructed along a greater portion of said conveyor to allow side loading of logs onto said conveyor,

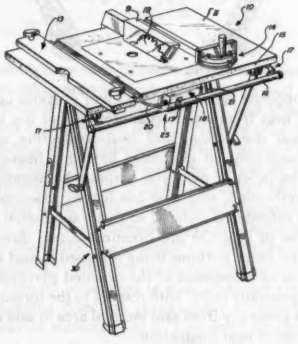
(j) and stop means on the other side of said frame from said unobstructed side for limiting the loading travel of logs when side loaded onto said conveyor.

4,362,196

POWER TOOL TABLE WITH SAFETY SHUT-OFF

Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.

Filed Sep. 24, 1980, Ser. No. 190,442
Int. Cl.³ D06F *71/00*; B25H *1/00*
U.S. Cl. 144—286 R **9 Claims**



9. An improvement in a table assembly for supporting a power tool in which said assembly includes a table defining an operator location along one edge, the improvement comprising:

(a) an electric conductor supported by said table and adapted to transmit electricity from an electric power source;

(b) a shut-off switch connected to said conductor and mounted to the underside of said table adjacent to said one edge;

(c) an electric outlet receptacle connected in series with said shut-off switch and adapted to connect the shut-off switch to said tool;

(d) a pair of spaced-apart mounting brackets on the underside of said table adjacent said one edge;

(e) an arm pivotably mounted to each of said mounting brackets;

(f) a cylindrical bar adjacent and generally parallel to said one edge of said table and secured at each end to one of said arms whereby the bar can be moved between a first position adjacent said operator location and a second position engaging said shut off switch; and

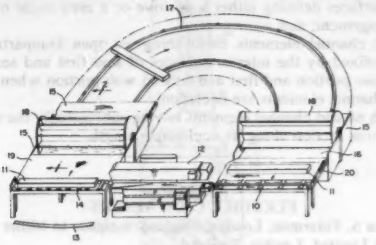
(g) a leaf spring secured to and extending from the underside of said table along said one edge for biasing said bar toward first said position.

4,362,197

PROCESS FOR SLICING VENEER

Charles H. Wick, Woodinville, and Stephen J. Suor, Bellevue, both of Wash., assignors to Simpson Timber Co., Seattle, Wash.

Filed Jan. 26, 1981, Ser. No. 228,131
Int. Cl.³ B27M *1/00*
U.S. Cl. 144—364 **10 Claims**



1. A continuous process for slicing uniform veneer from kiln-dried lumber, comprising the steps of:

(1) soaking the working face of the lumber to be sliced in a water bath for a sufficient time that a veneer cut therefrom will not curl excessively;

(2) slicing a veneer from the working face of the lumber;

(3) returning the lumber to the water bath to again soak the working face of the lumber; and

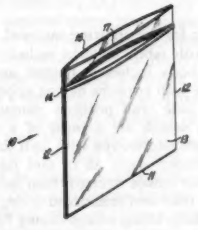
(4) slicing a second slice of veneer from the working face.

4,362,198

CLOSURE DEVICE

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 892,432, Mar. 31, 1978, Pat. No. 4,212,337.
This application Mar. 26, 1980, Ser. No. 134,167
Int. Cl.³ B65D *33/30*
U.S. Cl. 150—3 **22 Claims**



1. A container including two sidewalls and a closure fastening device consisting essentially of:

a first u-shaped channel element including a first base portion having one side connected to one of said sidewalls, a pair of spaced apart first webs extending from said first base portion, and first hook portions extending from each of said first webs and facing away from each other;

and a second u-shaped channel element including a second base portion, a pair of spaced apart second webs extending from said second base portion having one side connected to the other sidewall, and second hook portions nonlinearly extending from each of said second webs and facing towards each other;

one of said channel elements further comprising a spring element extending from its base portion to the base portion of said second channel element when said channel elements are occluded;

said bases being of sufficient width to allow at least one of them to flex during the occlusion and opening of said fastening devices:

said channel elements being adapted to interlock by pressing said first channel element into said second channel element so that said first and said second hook portions engage at predetermined pairs of contact surfaces, one of said pairs of said contact surfaces defining a negative angle of engagement and the other of said pairs of said contact surfaces defining either a positive or a zero angle of engagement; and

said channel elements establishing an open compartment defined by the interior surfaces of said first and second base portion and first and second web portion when said channel elements are occluded,

each of said channel elements having substantially the same cross section along its occludable length.

4,362,199

FLEXIBLE CONTAINERS

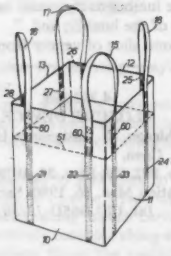
Charles S. Futerman, London, England, assignor to Miller Weblift Limited, London, England

Continuation-in-part of Ser. No. 864,850, Dec. 27, 1977, abandoned. This application Oct. 23, 1979, Ser. No. 87,507

Claims priority, application United Kingdom, Jan. 10, 1977, 795/77

Int. Cl.³ B65D *33/06*

U.S. Cl. 150—12 **17 Claims**



1. A flexible bag for transporting material, comprising

(a) a body of textile fabric material including warp and weft threads, said body including bottom and side wall portions, said side wall portions having upper edges, selected parts of said side wall portions containing reinforcing warp threads which are formed of a synthetic plastic material and are interwoven with weft threads, thereby to provide reinforced areas, all of said reinforcing threads having a higher tensile strength than the warp threads in an area other than said reinforced areas; and

(b) open-ended loop lifting means having free ends, said free ends being attached to said reinforced areas at locations which are spaced upwardly from said bag bottom portion and are adjacent the upper side wall edges, respectively, thereby to produce a bag having a greater load bearing capacity when lifted by said lifting means.

4,362,200

PNEUMATIC TIRE

Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 20, 1980, Ser. No. 198,884

Int. Cl.³ B60C *19/06*; C01B *31/04*; C08K *9/00*

U.S. Cl. 152—153 **3 Claims**

1. In a pneumatic tire construction made primarily of elastomeric materials and comprising: an inner carcass assembly terminating in a pair of bead assemblies; an outer assembly comprising a tread assembly having a pair of shoulder portions and a road-gripping portion therebetween, a pair of sidewall assemblies, a rim strip between each of said bead assemblies and said sidewall assemblies, a sidewall-to-shoulder strip between each of said sidewall assemblies and said shoulder portions, and an annular reinforcing assembly disposed between said tread assembly and the radially outermost surface of said inner carcass assembly; the improvement comprising opposite layers of heat-conducting elastomeric material disposed between said inner carcass assembly and said tread assembly, said sidewall assemblies having outer portions also comprising heat-conducting elastomeric material, each of said opposite layers having one side portion thereof in contact with said reinforcing assembly and an opposite side portion thereof in contact with one of said outer portions of said sidewall assemblies, said opposite layers and said outer portions cooperating to conduct heat from an internal area in said tire to external areas of heat dissipation, said heat-conducting elastomeric material comprising an elastomer having a heat-conducting amount of particles of pyrolytic graphite homogeneously dispersed therethrough, said heat-conducting elastomeric material being a calendered material so that a substantial portion of said particles of graphite are oriented in one direction, said layer and said outer portions being disposed in said tire so that said direction of orientation of the oriented pyrolytic graphite particles is generally radial with respect to the toroid of the tire and extends generally from said internal area in said tire to said external areas of heat dissipation.

4,362,201

TREAD PROFILE FOR PNEUMATIC VEHICLE TIRES

Norbert Zinnen, Aachen, Fed. Rep. of Germany; Henri J. Mirtain, Compiegne, France, and Harm J. Arends, Voerendaal, Netherlands, assignors to Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,712

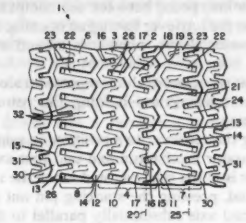
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 8007151[U]

Int. Cl.³ B60C *11/06*

U.S. Cl. 152—209 R **16 Claims**

1. A tread profile for a pneumatic vehicle tire having a main tread and tire shoulders including respective shoulder regions and sidewalls, said tread having a central region extending in the circumferential direction of said tire between said shoulder regions with shoulder-block formation, said tread profile comprising in combination therewith a plurality of meandering profiled ribs both in the central region and shoulder regions including at least two narrow ribs extending continuously in the circumferential direction of said tire, and a plurality of continuous circumferential grooves including at least three grooves located peripherally which separate said profiled ribs from one another, said ribs having side edges formed by said grooves, said side edges being toothed in outline and obtuse-angled; extending into said ribs from said grooves are blind

grooves which are all very deep even in central and shoulder regions and which are all oriented at an angle to the circumferential direction of said tire and have closed ends that terminate in an inclined configuration for reasons of strength and stability, block-rib parts being formed between said side edges of said ribs and respective closed ends of said blind grooves, said block-rib parts having tread surfaces and an inclined triangular-wall-shaped lengthened meander side edge configuration of blocks existing for the shoulder-block formation having more extensive edge length by being inclined without leading disadvantageously to block tear-out damage, the shoulder regions being provided with a meandering profiled rib, that block-rib part of which facing the central region having larger raised surfaces which are at least twice as large as those of the ribs of the central region and said circumferential grooves having a corresponding zig-zag shape, and furthermore in a given profiled rib, which has two side edges, said blind grooves extending into said rib from both of said side edges, so that the blind grooves extending into said rib from one of said side edges extending toward said central region of said tread, and the blind grooves extending into said rib from the other of said side edges extending in the opposite direction, namely away from said central region of said tread, the length of these blind grooves extending beyond a center line of the ribs associated therewith, said blind grooves respectively representing a water-receiving and water-dissipating system of tread drainage by the blind grooves effective essentially in circumferential direction and particularly effective to function in a safe manner with tread road contact broadened in axial direction yet shortened in circumferential direction considerably to improve hydroplaning behavior accompanied by low noise development due to continuous tying together of said block rib parts, at least said blind grooves extending from the main tread to the tire shoulders being approximately twice as long as the remaining blind grooves.



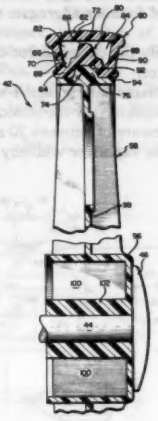
4,362,202

SEMI-PNEUMATIC TIRE

Martin B. Sacks, Claypool, Ind., assignor to Sun Metal Products, Inc., Warsaw, Ind.

Filed Mar. 30, 1981, Ser. No. 249,024
Int. Cl.³ B60C *7/24*
U.S. Cl. 152—325 **6 Claims**

1. A semi-pneumatic tire body for assembly to the rim of a wheel, comprising: an annular, ground-engaging tire tread portion; an annular, rim-engaging tire root portion spaced apart from said tread portion in generally radial alignment therewith; laterally spaced sidewalls connecting said tread portion and said root portion to define annular, closed cavity means therebetween; and an annular, load-bearing rib confluent with one of said tire tread portion and said tire root portion and extending radially toward the other of said tire portions and into said cavity means to divide said cavity means into lateral chambers, said rib having a base element and a narrower tip element connected to said base element, detached from said other tire portion and normally spaced apart from the inner wall of said other tire portion in the unloaded state to establish substantially continuous communication between said lateral chambers for free gaseous interchange and said rib having a height substantially equal to the radial extent of said sidewalls whereby to support said other tire portion in the loaded state.



4,362,203

PROCESS FOR PREPARING FOUNDRY CORES OR MOLDS AND BINDER MATERIALS USED THEREFOR

Susumu Konii; Shigeo Sase; Masatoshi Yoshida; Shoei Kuroda, and Takeshi Sumi, all of Shimodate, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 92,022, Nov. 7, 1979, Pat. No. 4,283,319.
This application Mar. 27, 1981, Ser. No. 248,536
Claims priority, application Japan, Nov. 13, 1978, 53-139733
Int. Cl.³ B22C *1/18, 1/22*
U.S. Cl. 164—16 **18 Claims**

1. A process for preparing a foundry core or mold which comprises forming into a shape of a core or mold a foundry mold composition containing (A) refractory particles, and (B) a foundry binder material comprising an alcohol-soluble phenolic resin selected from the group consisting of a resole, a novolac, an N-methylene-resole, a dimethylene ether-type resole, a formal-type resole and a mixture thereof, 10 to 300 parts by weight of a hydroxide and/or an oxide of a polyvalent metal selected from the group consisting of an alkaline earth metal, aluminum, zinc, iron, nickel, titanium, silicon, tin, and a mixture thereof, 100–500 parts by weight of water, 1 to 100 parts by weight of an organic solvent selected from the group consisting of an alcohol, an aromatic hydrocarbon, a ketone, an acetic ester, a phthalic ester, an ether, a cellosolve, dimethylformamide dimethyl sulfoxide and a mixture thereof, and 0.1 to 50 parts by weight of an alkali metal hydroxide, said parts by weight being based on 100 parts by weight of said alcohol-soluble phenolic resin, and then gassing said core or mold with carbon dioxide.

4,362,204

METHOD AND APPARATUS FOR CURING A FOUNDRY CORE

Russell H. Moore, Gladstone, and Patrick O'Meara, Madison Heights, both of Va., assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 130,790, Mar. 17, 1980, abandoned.
This application Oct. 8, 1981, Ser. No. 309,740
Int. Cl.³ B22C *1/22*
U.S. Cl. 164—16 **7 Claims**

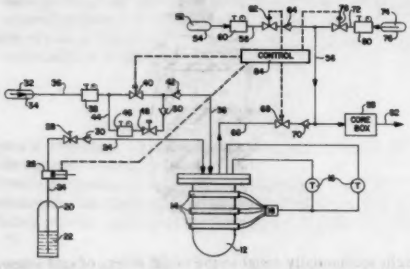
1. A process for curing foundry cores of the type in which a foundry aggregate is mixed with a curable binder to form a

core mixture which is carried within a hermetically sealed core box comprising the steps of:

causing a liquid amine curing agent in the amount 0.05 to 0.2% by weight of foundry aggregate to flow into a vaporizer;

vaporizing completely the curing agent by the addition of heat to the vaporizer;

evacuating the vaporized curing agent substantially completely from the vaporizer by the introduction of an inert carrier gas at a pressure of between 20 and 50 pounds per square inch into the vaporizer whereby a catalyzing mixture is formed consisting of the vaporized curing agent and the inert carrier gas;



injecting the catalyzing mixture into a lower pressure stream of air pressurized to between 5 and 30 pounds per square inch and at a temperature sufficient to maintain the mixture in a gaseous state such that the resultant mixture has a pressure of between 5 and 50 pounds per square inch;

passing the air stream bearing the catalyzing mixture at a pressure of between 5 and 50 pounds per square inch about the core mixture within the core box thereby curing the core; and

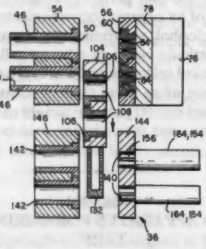
purging the catalyzing mixture from the box.

4,362,205

ROTOR DIE CASTING METHOD

James C. Cole, Galion, and George F. Cronenwett, Mount Gilead, both of Ohio, assignors to HPM Corporation, Mount Gilead, Ohio

Filed Feb. 2, 1981, Ser. No. 230,455
Int. Cl.³ B22D *19/00*
U.S. Cl. 164—109 **19 Claims**



1. A method for die casting end rings and conductor bars on motor rotors comprising the steps of:

providing a compensator mechanism comprising a compensator sleeve having a breech opening in a side thereof and a compensator received in the sleeve for reciprocal movement along a first axis,

providing a die plate closing off one end of the compensator sleeve to form a die cavity, the die plate and compensator sleeve being axially separable,

storing a plurality of stacks of motor laminations, each stack held together by a stacking pin, on a loading rack positioned laterally on one side of the compensator mechanism and the first axis,

causing one of the stacks to roll by gravity from the loading rack into the compensator sleeve through the breech opening thereof,

pushing the stack forward in the compensator sleeve by the compensator into abutment with the die plate,

injecting a charge of molten metal into the die cavity formed by the compensator, compensator sleeve and die plate on and through the stack to form end rings and conductor bars on the stack to thereby form a rotor,

then axially separating the die plate and compensator sleeve,

moving a retriever laterally from said one side of the first axis and perpendicularly toward said first axis to an unload position interposed between the compensator sleeve and die plate, the retriever having an opening aligned with the compensator sleeve when it is moved to its unload position,

pushing the cast rotor out of the compensator sleeve and into the retriever opening and holding the rotor in the retriever opening,

then retracting the retriever to a position on said one side of said compensator mechanism and said first axis,

while the rotor is in the retriever and when the retriever has been retracted, pressing the stacking pin out of the rotor along a second axis substantially parallel to the first axis and ejecting the rotor out of the retriever opening along said second axis,

after the retriever has retracted away from the compensator sleeve and die plate, bringing the die plate and compensator sleeve together, and

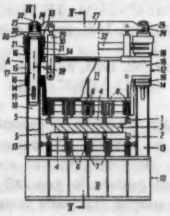
subsequent to clearing of the retriever from between the compensator sleeve and die plate and prior to the injection of the rotor from the retriever opening, rolling another stack into the compensator sleeve and pushing the last mentioned stack forward in the compensator sleeve.

4,362,206

SUPPORTING AND GUIDING STAND ARRANGEMENT TO BE USED IN A CONTINUOUS CASTING PLANT

Johannes Cordella; Franz Bayer, both of Linz, and Erich Felbermayer, Wels, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 19, 1980, Ser. No. 160,924
Claims priority, application Austria, Jun. 28, 1979, 4511/79
Int. Cl.³ B22D *11/12*
U.S. Cl. 164—448 **3 Claims**



1. In a supporting and guiding stand arrangement to be used in a continuous casting plant, such as a casting plant for slabs, and of the type including a first supporting framework and an oppositely arranged second supporting framework, each of said first and second supporting frameworks comprising cross carriers, and longitudinal carriers mounted on said cross carriers and extending over the total length of said supporting and guiding stand, a first and a second roller way being provided

on the longitudinal carriers of each of said first and second supporting frameworks, respectively, a plurality of drawing anchors for bracing said second supporting framework relative to said first supporting framework and for connecting said second supporting framework to said first supporting framework, and adjustment drives for displacing said second supporting framework relative to said first supporting framework, the improvement comprising connection means for connecting said drawing anchors with said first supporting framework, said drawing anchors being arranged on the ends of the oppositely arranged cross carriers and connecting the oppositely arranged cross carriers of said first and second supporting frameworks, the outer ends of said oppositely arranged drawing anchors being hinged to and connected by crossheads, said adjustment drives being approximately parallel to said drawing anchors and being hingedly connected with said crossheads and being connected with the cross carriers of said second supporting framework, said drawing anchors being detachably connected to the cross carriers of said first supporting framework, whereby after release of said connection means said drawing anchors are removable from said first supporting framework out of a connection position connecting said first and second supporting frameworks and retractable by said adjustment drives into a retraction position in said second supporting framework.

4,362,207

INTEGRATED HEAT EXCHANGE AND HEAT STORAGE SYSTEM USING LOW-TEMPERATURE REACTIONS

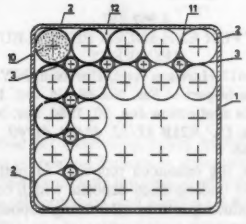
Flaviano Farfaletti-Casali, Brebbia; Umberto Buzzi, Angera; Leendert Nobel, Laveno Mombello, and Friedrich Reiter, Ispra, all of Italy, assignors to European Atomic Energy Community (Euratom), Luxembourg

Filed Jul. 14, 1980, Ser. No. 168,067

Claims priority, application Italy, Jul. 12, 1979, 49736 A/79

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—10 **5 Claims**



1. An integrated heat exchange and heat storage system using thermochemical reactions, characterized in that it comprises: a first plurality of parallel adjacent tubes containing an element for storing and yielding heat; and a second plurality of tubes parallel to said first plurality of tubes and interposed therebetween and containing a fluid heat vehicle, said first and second plurality of tubes being disposed in a receptacle whose major axis extends parallel to the axis of the tubes, the voids between the various tubes being filled with a stagnant liquid serving to facilitate heat exchange between the fluid heat vehicle and the element for storing and yielding heat.

4,362,208

MOTOR VEHICLE, ESPECIALLY A TRUCK, WITH A COOLING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

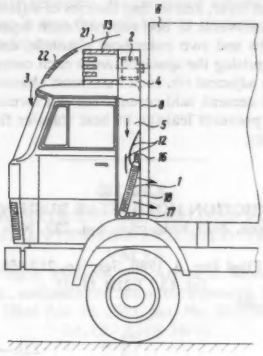
Kurt Hauser, Stuttgart, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. K.G., Stuttgart, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,855

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941093

Int. Cl.³ B60K *11/04*

U.S. Cl. 165—51 **19 Claims**



1. A motor vehicle with a cab and a cooling system for a single internal combustion engine, said system comprising a heat exchanger disposed in an engine compartment and provided with an associated blower for providing approximately 70% of the maximum cooling power of said system, and at least one additional heat exchanger located outside the engine compartment and with which an addtional blower is associated for providing the remaining cooling power of said system, wherein said additional blower is mounted on a roof of the cab and is connected through channel means with said additional heat exchanger which is located within said channel means in the vicinity of one wall of the cab, and wherein said additional heat exchanger is located at a level below the roof of the cab when said vehicle is in an upright position.

4,362,209

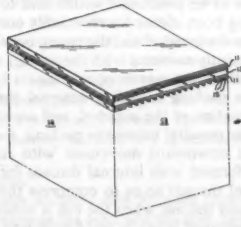
CERAMIC HEAT RECUPERATIVE STRUCTURE AND ASSEMBLY

Joseph J. Cleveland, Dushore, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 939,094, Sep. 1, 1978, abandoned. This application Dec. 11, 1980, Ser. No. 215,307

Int. Cl.³ F28F *3/10*

U.S. Cl. 165—166 **17 Claims**



1. A cross flow ceramic recuperative core structure, having first and second pairs of opposing faces defining channel open-

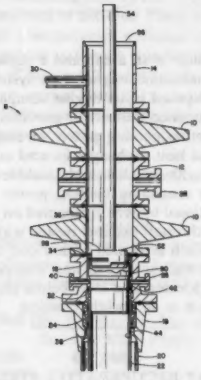
ings for the passage of heat transfer fluids respectively, in directions transverse to one another, the first fluid transferring heat to the second fluid during passage through the channels, whereby each pair of faces has in operation a hot face and a cold face, the hot face of the first pair being the inlet face for the first fluid and the hot face of the second pair being the outlet face for the second fluid, characterized in that the structure is composed of a plurality of stacked ribbed layers, each layer having opposing first and second sides and a plurality of upstanding ribs positioned on the first side thereof, the ribs substantially parallel to one another and substantially perpendicular to the side of the layer, the layers stacked so that the ribs of one layer are in substantial contact with the second side of an adjacent layer, and so that the ribs of adjacent layers are alternately transverse to one another, each layer having two outermost ribs and two outermost channels, each outermost channel comprising the space between each outermost rib and its respective adjacent rib, each outermost channel being filled with ceramic cement, said ceramic cement forming a seal that substantially prevents leakage of heat transfer fluids between adjacent layers.

4,362,210

FRICTION HOLD WEAR BUSHING

James R. Green, 3823 Ridgelake, Apt. 223, New Orleans, La. 70124

Filed Dec. 4, 1980, Ser. No. 212,855
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—85 **5 Claims**



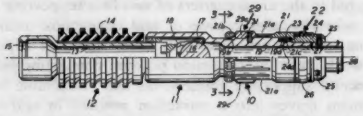
1. An apparatus to protect the upper section of a string of oil well casing from drill string members passing therethrough, comprising: a tubular mandrel having a lower section for positioning within the upper section of the casing; the mandrel having a bore therethrough sufficient for the passage of drill string members; pliable packing disposed around and retained with the lower section of the mandrel; the packing being dimensioned so as to be positioned within and to be squeezed against the casing bore; means for reversably compressing the packing between the mandrel and the casing bore such that the mandrel is sufficiently mounted with the casing, against forces caused by the drill string members; said means for reversably compressing the packing including external threads formed with an upper portion of the mandrel, and annular ring positioned around the mandrel below the packing, means to retain the ring against downward movement with respect to the mandrel, a nut formed with internal threads for cooperating with the mandrel threads so as to compress the packing between the ring and the nut when the nut is rotated, such that the packing is deformed laterally and forced into contact with the mandrel and the casing bore so as to firmly mount the mandrel with the casing; the nut having an upper bore formed with a plurality of inwardly projecting circumferential flanges, each flange being axially disposed from the others, each of the flanges extending for substantially one half the circumference around the bore, axially adjacent flanges being positioned diametrically opposite from each other; and a wrench member having sufficient length to reach and engage the nut when the nut and mandrel are mounted with the casing, the wrench and nut comprising a releasable connection sufficient to rotate the nut to thereby reversably compress the packing, and to lift the apparatus.

4,362,211

LOCKING MANDREL

Ernest P. Fisher, Jr., Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 4, 1980, Ser. No. 212,996
Int. Cl.³ E21B *23/02, 23/08*
U.S. Cl. 166—217 **18 Claims**



2. A locking mandrel comprising,
an elongated body,
a dog carrier mounted on the body for relative longitudinal movement with the body,
radially extensible and contractable dog means supported on the dog carrier,
first releasable latch means securing the dog carrier against longitudinal movement of the body,
an expander slidable on the body for expanding said dog means, and
second releasable latch means securing said expander against longitudinal movement on the body,
said expander including shoulder means for engagement with a landing nipple shoulder and arresting movement of the expander in one direction,
said expander movable to a position locating said expander under said dogs to position them in extended position after said second latch means has been released,
said dog carrier and expander relatively movable to a position disengaging said dogs from said expander upon release of said first latch means.

4,362,212

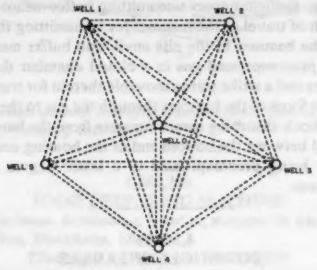
METHOD FOR ENHANCED PETROLEUM OIL RECOVERY

Helmut Schulz, 611 Harrison Ave., Harrison, N.Y. 10528

Continuation-in-part of Ser. No. 58,635, Jul. 19, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,439
Int. Cl.³ E21B *43/22, 43/30, 43/40*
U.S. Cl. 166—245 **11 Claims**

1. Process for the enhanced recovery of petroleum from partially depleted underground deposits which comprises the steps of (a) introducing into an oil-bearing deposit a non-condensible gas to establish a gas cushion of non-condensible gas with a back pressure at a regulated pressure level; (b) introducing a liquid mixture of light hydrocarbons into said underground oil deposit through at least one injection well penetrating said deposit against the back pressure of said non-condensible gas cushion, said back pressure being sufficient to maintain said hydrocarbon mixture in the liquid state at the temperature of said deposit (c) lowering the pressure of said non-condensible gas by withdrawing a portion of said non-condensible gas through at least one production well penetrating said oil deposit until the pressure within said deposit is lower than the vapor pressure of said light hydrocarbon mixture and maintaining this lower pressure until at least 20% of said hydrocarbon

mixture has vaporized; (d) reintroducing said non-condensible gas through said production well to raise the pressure within said petroleum deposit substantially above the vapor pressure of said light hydrocarbon mixture and maintaining the higher pressure until substantially all of the vaporized light hydrocarbon mixture has condensed within said deposit; (e) repeating the boiling and condensation sequence one or more times; and (f) then producing the resultant solution of extracted oil dissolved in said light hydrocarbon mixture by means of an appropriate displacement fluid.



4,362,213

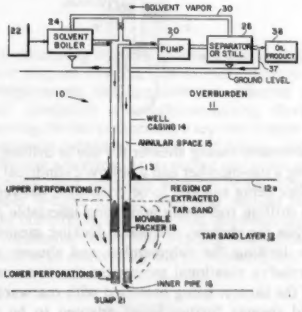
METHOD OF IN SITU OIL EXTRACTION USING HOT SOLVENT VAPOR INJECTION

Paul R. Tabor, Mercerville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Continuation of Ser. No. 974,630, Dec. 29, 1978, abandoned. This application Nov. 19, 1980, Ser. No. 208,214

Int. Cl.³ E21B *43/24, 43/40*

U.S. Cl. 166—267 **5 Claims**



1. A method for recovering heavy hydrocarbons from an underground oil bearing formation, comprising the steps of:

(a) providing a well hole through overburden and extending into the oil formation, and inserting a tubular casing into the hole;

(b) perforating the casing at upper and lower locations vertically within the formation;

(c) providing an inner pipe within the casing and positioning a first packer in the annulus between the casing and inner pipe at an intermediate level within the formation, so that the casing perforations are above and below the packer;

(d) positioning a second packer above the first packer so that the vapor injection point is moved upward in the oil containing formation;

(e) injecting hot hydrocarbon solvent vapor into the annulus at pressure not more than about 100 psi greater than the formation pressure, so that the vapor passes outwardly through the upper perforations and into the formation to initially warm and extract oil from the formation;

(f) allowing the extracted oil and condensed solvent liquid to drain through perforations below the first packer into the lower end of the casing and piping, while maintaining a liquid layer in the formation between the vapor injection point and the oil drainage point to prevent vapor breakthrough to the drainage point, then pumping the recovered oil and solvent liquid mixture out through the inner pipe to above ground;

(g) reclaiming a solvent fraction from the recovered oil and solvent mixture by distillation; and

(h) separately reheating the reclaimed solvent fraction and reinjecting it into the well hole to recover additional oil from the formation.

4,362,214

TUBING RETRIEVABLE VARIABLE SETTING DIFFERENTIAL PRESSURE ACTUATED WELL SAFETY VALVE

Ronald E. Pringle, Houston, and Arthur J. Morris, Magnolia, both of Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Jan. 19, 1981, Ser. No. 226,295

Int. Cl.³ E21B *34/10*

U.S. Cl. 166—322 **6 Claims**

1. A tubing retrievable differential pressure actuated well safety valve comprising,

a housing adapted to be threadably connected to well tubing, and having a bore therethrough,

a valve element connected to the housing and movable between open and closed positions in the bore,

a flow tube longitudinally movable in the housing for causing the opening and closing of the valve element,

spring means positioned between the housing and the flow tube for moving the tube in a direction to open the valve element,

a choke bean,

longitudinally actuated non-threaded releasable connecting means between the bean and the flow tube for connecting the choke bean to and releasing the choke bean from the flow tube by longitudinal movement of the bean relative to the flow tube while the valve is positioned in a well.

4,362,215

MARINE RISER PROVIDED WITH A HINGED FOOT FOR OFFSHORE HYDROCARBON PRODUCTION

Charles Sparks, Le Vesinet, France, assignor to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Nov. 28, 1980, Ser. No. 210,963
Claims priority, application France, Nov. 30, 1979, 79 29723
Int. Cl.³ E21B *17/01, 33/038, 43/013*
U.S. Cl. 166—367 12 Claims

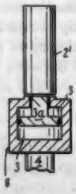
1. A marine riser having a hinged foot, for offshore hydrocarbon production, adapted for connecting an underwater installation to a production platform, said riser comprising a central pipe provided with a plurality of satellite pipes, and a flexible assembly, for connecting the riser to the underwater installation, associated with a plurality of flexible connecting hoses each of which is arranged around said flexible connecting assembly in a substantially helical winding arrangement, and said flexible connecting hoses arranged for connecting said satellite pipes to corresponding tubes on the underwater installation, and upper securing means and lower securing means for securing said connecting hoses to said flexible connecting assembly, said upper and lower securing means being respectively integral with the upper and lower parts of said flexible assembly and arranged for maintaining the extremities of each flexible connecting hose oriented in the extension of said helical winding arrangement.

4,362,216

PILE DRIVING APPARATUS

Joost W. Jansz, The Hague, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Oct. 28, 1977, Ser. No. 846,563
Claims priority, application United Kingdom, Nov. 2, 1976, 45592/76
Int. Cl.² B25D *9/00*
U.S. Cl. 173—131 7 Claims



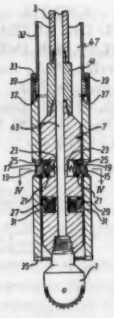
1. A pile driving apparatus comprising a hammer for delivering an impact force to a pile, a housing having a bottom end, said hammer being mounted for movement within said housing, a pile sleeve extending downwardly from the bottom end of the housing for guiding the apparatus onto and receiving the top of a pile to be driven, a pile anvil, means holding said pile anvil captive within said pile sleeve for limited movement therealong, resilient impact transmitting buffer means disposed in the path of travel of the hammer for transmitting the impact force of the hammer to the pile anvil, said buffer means comprising a precompressed gas in a closed chamber defined by wall means and a strike piston movable therein for transmitting the impact force of the hammer through the gas to the pile, and resilient shock absorbing means separate from the hammer and interposed between the bottom end of the housing and the pile anvil and being precompressed to a lesser degree than the buffer means.

4,362,217

DOWNHOLE SHEARERS

Frederick Fletcher, 43 Chepstow Rd., Grange Park, Blackpool, Lancashire, England

Filed Apr. 24, 1980, Ser. No. 143,453
Claims priority, application United Kingdom, Oct. 25, 1979, 7936965
Int. Cl.³ E21B *10/26*
U.S. Cl. 175—402 16 Claims



1. A downhole casing shearer for use in drilling bore holes, comprising a sub-member and a hollow cylindrical shearer, the sub-member being adapted to be connected between a drilling bit and a drilling rod string and being insertable at least partially within the shearer, releasable locking means being provided for locking the sub-member and shearer together to prevent relative rotational movement therebetween, one end region of the shearer being provided with rearwardly directed teeth, said shearer further being adapted to be rotationally connected to a casing liner for lining the bore in which the shearer is used enabling the shearer to rotate while the liner moves axially in the bore.

4,362,218

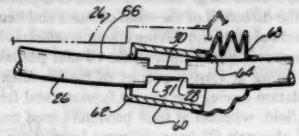
OVERLOAD PROTECTION FOR A WEIGH SCALE HAVING A FLEXURE BEAM

Ralph S. Shoberg, Brighton, Mich., assignor to GSE, Inc., Farmington Hills, Mich.

Filed Jul. 1, 1980, Ser. No. 165,156
Int. Cl.³ G01G *23/02, 3/14*
U.S. Cl. 177—154 10 Claims

1. A weigh scale comprising at least one beam, a base, a platform, load transmitting means for deflecting the beam as a function of the load placed on the platform, sensor means on central portions of the beam for providing a signal relating to the amount of deflection, and rigid overload protection means

carried by the beam and generally bridging the central portion of the beam adapted to engage the beam when deflected beyond a certain amount to restrict further deflection of the beam to prevent yielding thereof.



4,362,219

FOOD PREPARING MACHINE

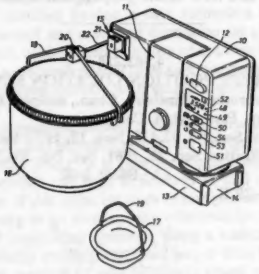
Karl L. Carlsson, Atvidaberg, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 2, 1981, Ser. No. 250,210

Claims priority, application Sweden, Apr. 3, 1980, 8003580

Int. Cl.³ G01G *19/52*

U.S. Cl. 177—245 **8 Claims**



1. In a food processing machine having a casing enclosing an electric motor adapted to drive one or more detachable food processing implements, the improvement wherein said machine further comprises a weight-measuring device, said weight-measuring device comprising a separable scale pan, and a weighing element extending within said casing, said weighing element having a portion for receiving said scale pan external of said casing, said weighing element being downwardly bendable under weight in said pan, said weight measuring device further comprising a display, and mechanical-electrical transducing means for converting bending movement of said weighing element to electric signals for said display.

4,362,220

INDUSTRIAL TRUCK

Eric W. Baston, Warwickshire, England, assignor to Coventry Climax Limited, England

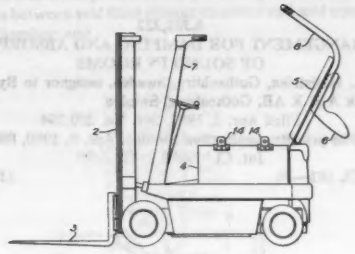
Filed May 30, 1980, Ser. No. 154,606

Claims priority, application United Kingdom, Jun. 2, 1979, 7919422

Int. Cl.³ B62D *25/00*

U.S. Cl. 180—68.5 **4 Claims**

1. An industrial truck of the type including a battery box fixedly mounted against horizontal movement relative to the remainder of said truck but normally free for vertical movement, and an overhead guard for a truck operator; said truck being improved by said overhead guard including a part having a pivotal mounting for facilitating movement of said overhead guard part to an out of the way position relative to said battery box, and cooperating means on said overhead guard part and said battery box for locating said battery box against vertical movement when said overhead guard part is in an operative operator-guarding position and releasing said battery box when said overhead guard part is in said out of the way position, said battery box having a cover which is pivotally mounted at one end thereof on said overhead guard part and which can be pivoted out of an operative position in which said battery box is closed.



4,362,221

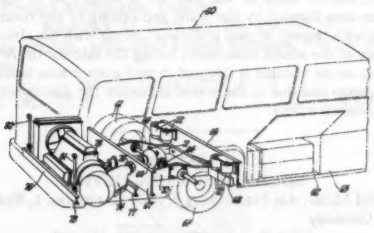
VEHICLE DRIVE WHEEL SUSPENSION

Donald L. Manning, 4002 Normanwood Dr., Orchard Lake, Mich. 48033

Continuation of Ser. No. 870,701, Jan. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 630,053, Nov. 7, 1975, abandoned. This application Oct. 22, 1979, Ser. No. 86,857

Int. Cl.³ B60K *7/000*

U.S. Cl. 180—73 R **3 Claims**



1. In a vehicle, a body member, a differential securely mounted to the body member, driving wheels laterally opposite the differential, live axles drivingly interconnecting the differential and wheels and having universal joints accommodating swinging movement of the wheels relative to the differential, a dead axle for carrying said wheels, said dead axle being in the form of a rack of generally rectangular configuration as viewed in plan and having two cross-members, one cross-member spaced rearwardly of the differential and the other cross-member spaced fowardly of the differential, two wheel bearing support members extending longitudinally of the vehicle between said cross-members, said cross-members and wheel carrying members being rigidly interconnected adjacent their respective ends, spring means interposed between said body member and said rack, a universal pivotal connection between the body and one of said cross-members intermediate said wheel bearing support members, an engine extending transversely of the vehicle and spaced longitudinally thereof from said one cross-member, said engine having an angle-drive transmission at its output end, a prop shaft having universal joints at its opposite ends drivingly connected to said transmission and differential respectively, a supporting frame for said engine, a pair of generally vertically extending links pivotally interconnecting the body and the lateral extremities of said frame, and a universal pivotal connection between said

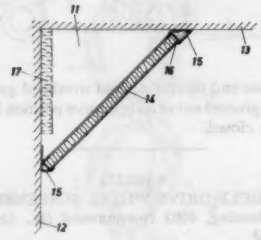
frame and the body longitudinally opposite said universal pivotal connection between the body and said one cross-member.

4,362,222

ARRANGEMENT FOR DAMPING AND ABSORPTION OF SOUND IN ROOMS

Per A. Hellström, Gothenburg, Sweden, assignor to Byggnadsfysik A & K AB, Gothenburg, Sweden

Filed Apr. 2, 1981, Ser. No. 250,254
Claims priority, application Sweden, Apr. 9, 1980, 8002653
Int. Cl.³ E04B 1/82, 1/99
U.S. Cl. 181—30 11 Claims



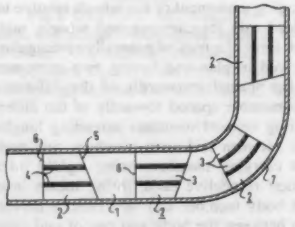
1. An acoustical system for damping and absorbing sound in rooms even at very low frequencies as well as improving speech comprehension in the entire room by lowering the resonance time, comprising sound absorbents in the form of plates, panels, mats or the like are arranged in at least one corner area formed by the walls and ceiling of the room at an angle with respect to said walls and ceiling with the absorption surface of the sound absorbents facing the interior of the room so that an air volume is trapped in said corner area behind the absorbents and due to the sound influence the absorbents have a membrane effect.

4,362,223

SOUND ABSORBING DEVICE

Irmhild Meier, Am Menzelberg 6, 3400 Goettingen 1, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,020
Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920278
Int. Cl.³ F01N 1/06; E04F 17/04
U.S. Cl. 181—206 14 Claims



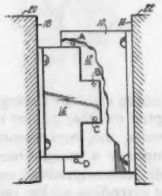
1. Apparatus for damping a sound field propagating in a fluid propagation medium within a main channel (1) having a closed cross-sectional periphery, comprising at least one first lattice work (2) arranged in said main channel (1) for extending between a first longitudinal section and a second longitudinal section of the free main channel cross-section, said lattice work being comprised of first and second thin partition wall means crossing each other and subdividing the free channel cross-section in the manner of a guide blade into a plurality of partial channels (3) for juxtaposed and superposed branching between said first and second longitudinal sections, said partial channels running in the direction of the main channel and being open at both longitudinal ends and having a length which is larger than the cross-sectional width dimensions of said partial channels, said length being at least a quarter of the wavelength of the sound oscillation having the lowest fundamental frequency of said sound field, wherein at least predetermined ones of adjacent partial channels (3) have different lengths for producing different sound oscillation states therein to be out of phase in said predetermined ones of adjacent partial channels, whereby in said predetermined ones of adjacent partial channels local sound pressure differences are produced and distributed over their length, said partition wall means (2) between said predetermined ones of adjacent partial channels (3) of different lengths being permeable for the propagation medium, at least over a partial length for causing at least partly local sound pressure difference compensation of said local sound pressure differences by a flow of the propagation medium from the one of the predetermined ones of said adjacent partial channels (3) into the adjacent one thereof, said wall means comprising a damping material, such as felt or sintered material, for frictionally damping said flow of the propagation medium.

4,362,224

DISCRETE POSITION LOCATION SENSOR

Robert E. Fairbrother, Simsbury, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 93,475, Nov. 13, 1977, abandoned. This application Sep. 21, 1981, Ser. No. 304,212
Int. Cl.³ B66B 3/02
U.S. Cl. 187—29 R 5 Claims



1. A position encoder comprising a first member and at least one second member, said members being relatively movable with respect to each other, said first member having disposed thereon N detectors, each having two states, the proximity of said second member with each of said detectors causing such detector to assume a first one of two states and the absence of said second member in proximity with any detector causing such detector to assume the other one of said states, said plurality of detectors being disposed on said first member in sequence along a direction of relative motion between said first member and any of said second members, said detectors being spaced apart from one another, said second member being sized and shaped to provide a length of effectiveness with respect to each of said detectors, along said direction of relative motion, to provide transition from one of said states to the other of only one of said detectors at one time, thereby to provide a pattern of the one of said states in which the various one of said detectors are in having two-N discrete positional zones which are symmetrical with respect to central alignment of said two members with one another, and to provide, when said first member and said second member are in maximum, central alignment along said direction of motion, the two outermost ones of said detectors in one of said states with at least one other of said detectors in another, different one of said states.

4,362,225
FRICTION LINING CARRIER MEMBER HAVING REPLACEABLE FRICTION LININGS

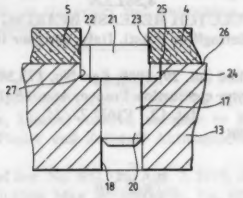
Peter Drott, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,134

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947537

Int. Cl.³ F16D *65/12*

U.S. Cl. 188—218 XL **14 Claims**



1. A friction lining carrier member having a plurality of replaceable friction linings comprising:

said carrier member having a first formation on an inner portion thereof and a second formation on an outer portion thereof, each of said plurality of friction linings being guided in a circumferential direction between and in positive engagement radially with said first and second formations; and

at least one supporting element disposed between each adjacent ones of said plurality of friction linings, said supporting elements being in a positive engagement with said carrier member and held in position in said carrier member by one of said adjacent ones of said plurality of friction linings being in an overlapping relationship therewith;

each of said supporting elements being a round bolt having a substantially rectangular head larger than the diameter of a shank portion of said bolt, said shank portion being disposed in a bore in said carrier member,

said head including a step on a side surface thereof adjacent to said one of said adjacent ones of said plurality of friction linings,

said head being disposed in a recess in said carrier member such that said step and a surface of said carrier member supporting said plurality of friction linings are on the same plane, and

said one of said adjacent ones of said plurality of friction linings being placed on said step in an abutting relation with a surface of said head perpendicular to said step.

4,362,226
VISCOUS FLUID CLUTCH AND RESERVOIR BY-PASS VALVE THEREFOR

Thomas A. Gee, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 948,448, Oct. 4, 1978, Pat. No. 4,246,995. This application Nov. 3, 1980, Ser. No. 203,025

Int. Cl.³ F16D *33/10*

U.S. Cl. 192—58 B **14 Claims**

1. A viscous fluid clutch comprising:

a first member secured for rotation with a shaft;

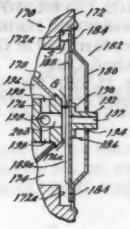
a second member rotatbly disposed on said shaft relative to said first member;

shear surfaces disposed on said first and second members and forming an operating chamber therebetween;

a fluid storage chamber adjacent said operating chamber;

pump means operative to circulate fluid between said operating chamber and fluid storage chamber;

a valving element operable to modulate said fluid circulation and including an elongated valve blade disposed within said fluid storage chamber and axially displaceable between a first position in which said blade overlays at least one drain port interconnecting the radially outwardmost portion of said fluid storage chamber with said operating chamber, and a second position in which said blade uncovers said drain port, thereby permitting fluid communication between said fluid storage chamber and said operating chamber; and



valve blade control means comprising stiffening means cooperatively oriented along the line of elongation of said valve blade and operative to maintain said valve blade in an orientation substantially parallel to that assumed in said first position when said valve blade is in said second position.

4,362,227
CLUTCHES AND BRAKES

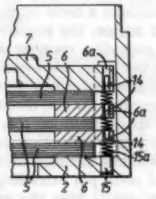
John M. Walton, and Anthony H. Mather, both of Greater Manchester, England, assignors to Stone-Platt Oldham Limited, Greater Manchester, England

Filed Oct. 17, 1980, Ser. No. 198,177

Claims priority, application United Kingdom, Nov. 1, 1979, 7937890

Int. Cl.³ F16D *13/56, 55/38*

U.S. Cl. 192—70.28 **4 Claims**



1. A clutch or brake assembly comprising:

a. A hub adapted to be mounted on a rotatable shaft for rotation therewith,

b. a reaction member which in the operative condition of the clutch or brake becomes coupled to the hub to prevent or inhibit relative rotation therebetween.

c. a first coupling disc located so that it is restrained against rotation relative to the reaction member and is displaceable axially of the hub relatively to the reaction member and having a plurality of holes extending through it,

d. a set of spring members by means of which said first coupling disc is, in the inoperative condition of the clutch or brake, located axially relatively to the reaction member, each spring member having an integrally formed loop portion which locates in a respective one of the holes in said first coupling disc and which is so shaped that it frictionally engages the wall of the hole in which it locates to mount the spring member directly on said first coupling disc.

e. a second coupling disc mounted on the hub so that it is fixed for rotation with the hub, and

f. actuating means for rendering the clutch or brake operative by applying an axial force to cause frictional engagement between the coupling discs.

4,362,228

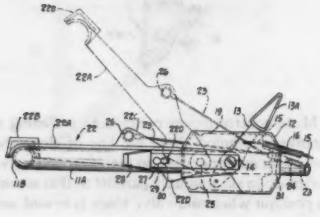
CONTROL LEVER MOUNTING

Gerhard R. Plamper, Valley City; Hartmut Kaesgen, Berea, and Robert W. Rush, Jr., Elyria, all of Ohio, assignors to MTD Products Inc., Cleveland, Ohio

Filed Oct. 22, 1980, Ser. No. 199,574

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.094 **10 Claims**



1. A mounting for the controls of an engine driven appliance such as a mower and the like, the appliance having a handle extending therefrom, the handle having a rearwardly disposed bar for being grasped by the operator of the appliance, a driven working part such as a mower blade adapted to be driven by the appliance engine, and a clutch mechanism for clutching and de-clutching the connection between the engine and driven working part, a dead-man control lever adapted to be operable by the operator grasping the rearwardly disposed bar of said handle, the dead-man control lever controlling the operation of said clutch mechanism through a cable interconnecting the clutch mechanism and the dead-man control lever, and a throttle lever for controlling the operation of the said appliance engine through a cable interconnecting the throttle lever and the said engine, the improvement comprising the combination of a mounting member secured to said handle within reach of the operator, said mounting member including a first pivot pin member extending into said handle, and providing a pivotal mounting for said throttle lever, the mounting member having a space provided therein for permitting the throttle member to swing within a range between spaced stops provided by the mounting member, the said mounting member including a second pivot pin extending into said handle at a distance along the handle from the said first pivot pin and providing a pivot mounting for said dead-man control lever, the mounting member having a space provided therein for permitting the said dead-man control lever to extend from the mounting member and to swing in an upright plane and along the said mounting member, and a locking member for selectively locking the dead-man control lever against pivotal movement toward a first position permitting movement of the clutch mechanism to clutched condition, said locking member being selectively movable to permit the dead-man control lever to move toward a position moving the clutch mechanism to unclutched condition, said locking member including a bolt-carrying member anchored to the said mounting member, biasing means biasing the bolt-carrying member toward said upright plane, said bolt-carrying member carrying an engaging member adjacent its free end for manually moving the bolt-carrying member against the bias of the said biasing means away from said upright plane, and a bolt secured to said bolt-carrying member and extending laterally of said mounting member to be moved by said bolt-carrying member into and out of said upright plane, the said bolt upon being moved across said upright plane by the bolt-carrying member under the urging of said biasing means protruding athwart the path of said dead-man control lever to bar its movement toward the first position permitting movement of the clutch mechanism to clutched condition, the dead-man control lever being movable by the operator to a second position to permit the movement of the clutch mechanism to clutched condition upon the withdrawal of said bolt from athwart the path of the dead-man control lever in said upright plane by the operator manually moving the bolt-carrying member and bolt carried thereby against the bias of the said biasing means away from said upright plane.

4,362,229

CLUTCH RELEASE BEARING

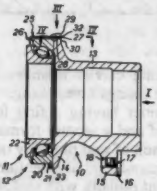
Gino Villata, Buttogliera d'Asti, Italy, assignor to Valeo, Paris, France

Filed Jul. 29, 1980, Ser. No. 173,387

Claims priority, application France, Aug. 16, 1979, 79 20772

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **11 Claims**



1. A clutch release bearing of the kind comprising an operating element intended to be subjected to the action of a control member, a drive element adapted to act on the release device of a clutch by the action of the operating element, and a connecting cap fastening said drive element axially to said operating element, said connecting cap comprising a plurality of axial lugs by which it is attached to the operating element, and a front wall which forms axially-acting resilient means, and through which it bears against the drive element to urge said drive element into contact with the operating element, characterised in that each of the axial lugs of the connecting cap has an enlarged free end which comprises laterally at least one arm, and the operating element is formed, for each of the said axial lugs, with an axial groove adapted to receive one of said lugs, at least one transverse retaining surface being provided on one side of this groove adapted for abutment with said lateral arm of the respective axial lug.

4,362,230

MOTOR VEHICLE CLUTCH MECHANISM

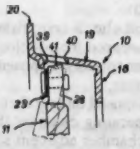
Cecilio Martinez Corral, Murcia, Spain, assignor to Fraymon S.A.E., Madrid, Spain

Filed Aug. 14, 1980, Ser. No. 178,010

Claims priority, application France, Aug. 17, 1979, 79 20837

Int. Cl.³ F16D *13/70, 13/69*

U.S. Cl. 192—109 R **13 Claims**



1. A clutch mechanism for a motor vehicle, comprising a cover having a transverse wall extending perpendicular to its axis, and lateral wall means joined to the transverse wall and

extending substantially parallel to the said axis, a pressure plate connected for rotation with the cover by coupling means enabling axial displacement of said pressure plate relative to said cover, and, disposed between the cover and the pressure plate, axially acting elastic means bearing on the cover and acting axially on the pressure plate to urge said pressure plate away from said cover, and abutment means operable to axially retain the pressure plate after a predetermined axial travel thereof relative to the cover, said abutment means comprising at least one transverse bearing shoulder integral with the cover and located on the other side of the pressure plate relative to the transverse wall of said cover, said bearing shoulder being formed directly on the cover and comprising a recess in the lateral wall thereof.

4,362,231

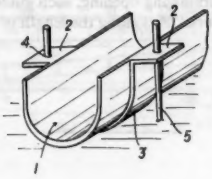
CHUTE FOR TRANSPORTING TIMBER

Walter Meyer, Liezen, Austria, assignor to Firma Leykam-Mürztaler Papier und Zellstoff Aktiengesellschaft, Vienna, Austria

Continuation of Ser. No. 602,726, Aug. 7, 1975, abandoned. This application May 18, 1978, Ser. No. 907,812

Int. Cl.³ B65G *11/10*

U.S. Cl. 193—2 R **5 Claims**



1. A chute for transporting timber by gravity, comprising interconnected trough-shaped chute sections of polyethylene, the chute sections defining a concavity capable of receiving the timber and having smooth and elastically deformable polyethylene walls supporting the timber.

4,362,232

STEP FOR PASSENGER CONVEYOR

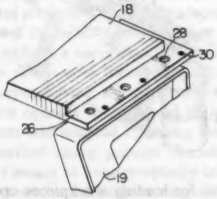
Cyuichi Saito; Isamu Shiraki, and Hiroshi Yumino, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 29, 1980, Ser. No. 125,780

Claims priority, application Japan, Mar. 5, 1979, 54-24436

Int. Cl.³ B66B *9/12*

U.S. Cl. 198—333 **10 Claims**



1. A step for a passenger conveyor, comprising a tread formed with a plurality of cleats defining grooves therebetween and adapted to mesh with comb-shaped teeth provided on step-on and step-out landings, and frame means on which said tread is mounted, wherein said tread is formed with substantially planar mounting sections having no cleats and extending longitudinally along opposite side edges of the tread, a first set of fastener means for removably mounting said tread at said substantially planar mounting sections on said frame means, said first set of fastener means being disposed so as to be freely accessible from above the mounting sections, a plurality of small covering members for respectively covering the mounting sections, each of the covering members are provided with at least two cleats defining a groove therebetween, and a second set of fastener means for removably mounting the respective covering members on the substantially planar mounting sections, said second set of fastener means being freely accessible from above the covering members.

4,362,233

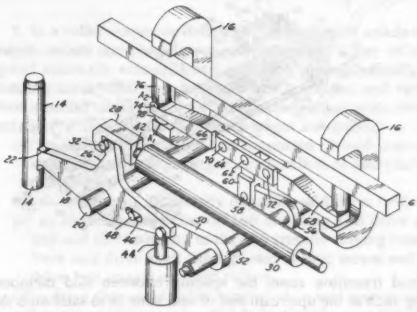
PALLET REGISTRY MECHANISM

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Continuation-in-part of Ser. No. 950,318, Oct. 11, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,092

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—345 **28 Claims**



1. In a multiple station transfer machine in which workpieces are located and supported in pallets, and in which said pallets are moved in sequence through said machine, interrelated registry mechanisms for locating and clamping said pallets, each of which comprises:

(a) a registry frame,

(b) one or more locating pin means slideably mounted in said frame to engage corresponding locating holes in said pallet,

(c) clamping means for said pallet movably mounted in said frame to contact said pallet on a contact surface,

(d) elastic energy storage means individual to and mounted in said registry frame,

(e) mechanical means on said frame interconnecting said energy storage means with said locating pin means and with said clamping means to sequentially engage said locating pins in said holes in said pallet and clamp said pallet to said registry frame independently of outside forces, and

(f) external power means interconnected with said mechanical means operable only to retract said clamping means from said pallet and thereafter to disengage said locating pin means from said holes in said pallet after engagement by said energy storage means.

4,362,234

HIGH SPEED CAP ORIENTING AND FEEDING APPARATUS

Walter McDonald, 558 Dell Rd., Landing, N.J. 07850, and Norbert F. Seitel, 45 Gillette Rd., Gillette, N.J. 07933

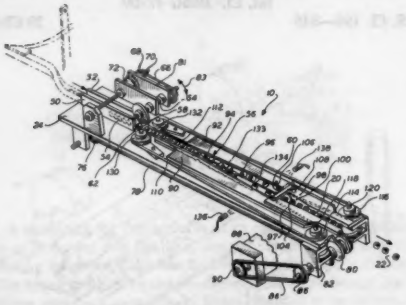
Continuation-in-part of Ser. No. 194,144, Oct. 6, 1980, abandoned. This application Nov. 3, 1980, Ser. No. 203,128

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—400 **10 Claims**

1. In apparatus for accepting an initially presented popula-

tion of randomly oriented container caps and providing an output in-line stream of said caps wherein the open or lighter ends of the caps face in an upward direction; said apparatus including means for accepting said randomly oriented caps and feeding an in-line stream of said caps wherein the caps are oriented with their diameters substantially in a vertical plane; and guide channel means having a base and including an input end for receiving said caps at said vertical orientation, an output end whereat the caps reside along their diameters with the open ends thereof facing upwardly, and a transition zone between the input and output ends whereat said caps may gravitationally tip and fall from the said vertical plane to their surfaces which include said diameters; a narrow support member extending longitudinally and centrally along the base of said transition zone for underlying and supporting said caps thereat; and a pair of members extending along the lateral sides



of said transition zone, the spacing between said members being such at the upstream end of said zone as to sandwich the said caps to constrain same against tipping, and said members diverging toward the downstream end of said zone, whereby to remove said constraint and permit said tipping; the improvement enabling higher speed feed of said caps through said channel and increased dependability of tipping in the desired direction, comprising:

said narrow support member and said lateral members comprising bands which are continually moveable at common speed through said transition zone; said members thereby grasping said caps at the upstream end of the said transition zone and conveying said caps through said zone, while permitting same to gravitationally fall as said lateral bands diverge, without said caps being rolled along said support member or otherwise being rotated about their axes.

4,362,235

APPARATUS FOR ASSEMBLING ARRAYS OF CIGARETTES OR THE LIKE

Otto Erdmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co., KG, Hamburg, Fed. Rep. of Germany

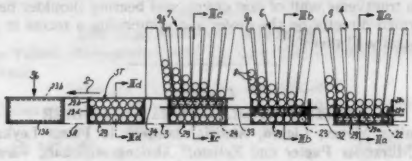
Filed Sep. 19, 1980, Ser. No. 188,255

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938613

Int. Cl.³ B65G *57/09, 57/18*

U.S. Cl. 198—419 **14 Claims**

1. Apparatus for assembling arrays of overlapping layers of parallel cigarettes or analogous rod-shaped articles which constitute or form part of smokers' products, comprising conveyor means movable stepwise in a predetermined direction along a predetermined path and including a series of receptacles; a magazine for storage of a supply of parallel articles, said magazine having a series of elongated openings, as considered in said direction, said openings being disposed in different planes and each thereof registering with a different receptacle during each period of dwell of said conveyor means, said magazine further having several groups of ducts, one group for each of said openings, for accumulation of successive layers of parallel articles in alignment with the corresponding openings; means for transferring layers of articles through said openings and into the registering receptacles during the intervals of dwell of said conveyor means whereby each receptacle which registers with a preceding opening, as considered in said direction, contains a lesser number of layers than the next-following receptacle wherein the layers overlie each other as a result of



disposition of said openings in different planes; and stationary guide members adjacent to said openings and each overlying at least a portion of the layer which issues by way of the adjacent opening, said guide members being spaced apart from each other and the guide member which is adjacent to a preceding opening being overlapped by the guide member which is adjacent to the next-following opening, such guide members overlapping each other at least along the length of the next-following opening.

4,362,236

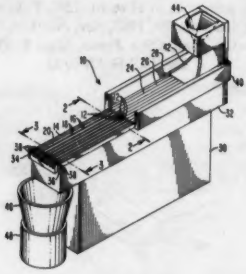
WORKPIECE LOADER

Rudolph H. Hedel, West Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1980, Ser. No. 205,916

Int. Cl.³ B65G *47/12*

U.S. Cl. 198—446 **13 Claims**



1. An apparatus for loading workpieces comprising a processing tray having two parallel sets of grooves adjacent a surface thereof, the grooves of one set alternating with and having grooves of a depth greater than the depth of the grooves of the other set, said apparatus further comprising an aligning tray having a depth greater than the depth of the grooves of said other set and having a periodicity equal to the periodicity of the grooves of said other set, said aligning and said processing trays being positioned in tandem so that the grooves of said other set are aligned with the grooves of said aligning tray.

4,362,237

MATERIAL CONVEYING SYSTEM WITH A PNEUMATICALLY OR MECHANICALLY OPERATED SUBSTANTIALLY UPRIGHT CONVEYOR PROVIDED WITH A DEVICE FOR LOOSENING AND TRANSPORTING THE MATERIAL TO THE UPRIGHT CONVEYOR

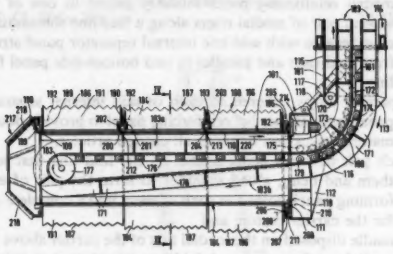
Adalbert Olsztynski, Wolfsburg, and Bernd Hardegen, Braunschweig, both of Fed. Rep. of Germany, assignors to Buehler-Miag GmbH, Braunschweig, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,254

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928162

Int. Cl.³ B65G *65/20*

U.S. Cl. 198—509 **8 Claims**



1. A material conveying system, especially for unloading of ships, comprising substantially upright support means; an adjustable jib connected to the bottom end of said upright support means, extending transverse to the latter and being provided at the upper side thereof with an elongated material inlet opening; means turnably mounted about said tubular jib and extending substantially over the whole length thereof for loosening material and for transporting the loosened material through said inlet opening into the interior of said jib, said material loosening and transporting means including a drum provided over the whole length thereof with circumferentially uniformly spaced shovels; drive means connected to said material loosening means for rotating the latter about the axis of said tubular jib; a driven endless band conveyor provided with a plurality of plates projecting uniformly spaced from each other in the direction of the band of the conveyor substantially normal therefrom to form a succession of material receiving cells which are open at the sides thereof opposite from said band, said band conveyor having a first portion extending beneath the material inlet opening through said jib to directly receive the material from said material loosening means and a second substantially vertical rising portion extending through said upright support means to uninterruptedly transport the material loosened by said material loosening means to a material receiving station; and a driven cover band extending parallel to said rising portion of said conveyor and covering the open sides of cells, said drum having a front end distant from said upright support means, and including a frustoconical head member coaxially connected to said front end of said drum for rotation therewith and provided on its outer surface with a plurality of uniformly displaced reaming plates to facilitate penetration of the outer end of said jib into a heap of material to be transported.

4,362,238

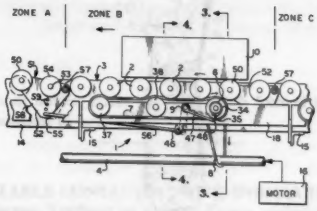
SELECTIVE DRIVE ARRANGEMENT FOR ROLLER CONVEYOR

Gerard B. Rivette, Mission Hills, Kans., assignor to Mid-West Conveyor Company, Kansas City, Kans.

Filed Apr. 10, 1980, Ser. No. 139,029

Int. Cl.³ B65G *13/06*

U.S. Cl. 198—781 **2 Claims**



1. In a roller conveyor defined by a plurality of article conveyor rollers transversely journaled between a pair of elongated conveyor side rails and including a longitudinally extending drive shaft supported on said conveyor and having motor means connected thereto to operatively provide driving rotation to said rollers, the improvement comprising:

(a) an endless roller drive belt supported on said conveyor and frictionally engaging selected rollers of said plurality thereof;

(b) sheave means frictionally engaging said drive belt;

(c) an endless power-take-off belt engaging said drive shaft and said sheave means to thereby transfer driving rotation from said drive shaft through said sheave means and said drive belt to said selected rollers;

(d) a drive sheave rotatably supported on said conveyor and having said power-take-off belt frictionally engaged therewith;

(e) a driven sheave rotatably supported on said conveyor substantially coaxial to said drive sheave, said driven sheave having said roller drive belt frictionally engaged therewith;

(f) clutch means interposed between said drive sheave and said driven sheave for selective coupling therebetween;

(g) said clutch means including a lug on an external surface thereof which revolves during the rotation of said sheave means, said clutch means normally effecting engagement between said drive sheave and said driven sheave and effecting disengagement therebetween upon the immobilization of said lug;

(h) signal means operatively connected with said clutch means for selective actuation thereof and including;

(1) a lug stop member supported on said conveyor and movable into a position to engage and thereby immobilize said lug,

(2) a signal roller normally positioned above the level of said article conveyor rollers for lowering to said level upon engagement by an article on said conveyor, and

(3) connecting means connected to said lug stop member and said signal roller and operative to move said lug stop member into a position to engage and immobilize said lug upon the lowering of said signal roller;

(i) said signal roller being supported on crank means rotatably connected to said conveyor;

(j) said lug stop member being rotatably supported on on said conveyor;

(k) a lug stop lever projecting from said lug stop member; and

(l) a connecting link connected to said crank means and said lug stop lever to thereby rotate said lug stop member into a position to immobilize said lug upon the rotation of said crank means effected by the lowering of said signal roller.

4,362,239
DISPLAY CARD WITH CONCAVE PANEL

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

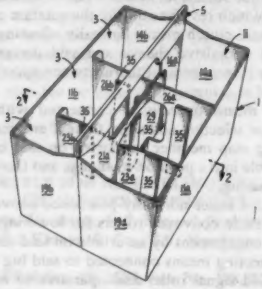
Filed Oct. 14, 1980, Ser. No. 196,662
Int. Cl.³ B65D 5/50
U.S. Cl. 206—45.14 12 Claims

1. A display support for an article of merchandise, said support comprising a back wall; a top horizontal wall; a bottom horizontal wall; said horizontal walls extending from said back wall; a smooth concave curved front wall without any folds therein extending continuously in an arc from the outer edge of the top horizontal wall to the outer edge of the bottom horizontal wall; at least one opening in the concave front wall for supporting merchandise to be displayed; said back wall being provided with a transverse score line parallel and adjacent to one of the horizontal walls and spaced from said one horizontal wall thereby permitting the back wall to bend at the transverse score line to maintain the smooth curvature of the front concave wall.

4,362,240
ARTICLE CARRIER CARTON

John R. Elward, Novato, Calif., assignor to Pacific Paperboard Products, Inc., San Mateo, Calif.

Filed Mar. 16, 1981, Ser. No. 243,726
Int. Cl.³ B65D 75/00
U.S. Cl. 206—188 3 Claims

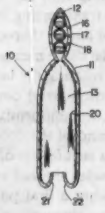


1. A basket type multi-use carrier carton comprising:
a bottom panel;
a first sidewall panel foldably joined to the bottom panel along a bottom-side panel fold line;
a second sidewall having a foldable tab for securing to it a free margin of the bottom panel opposite said bottom-side panel fold line;
a first pair of end-forming panels each foldably joined to a separate one of the side panels along fold lines perpendicular to said bottom-side panel fold line;
a first pair of medial risers each foldably joined to one of said first pair of end-forming panels along fold lines perpendicular to said bottom-side panel fold line and foldably joined together on the medial axis of the carrier carton;
a second pair of end-forming panels each foldably joined to a separate one of the side panels remote from the first pair of end-forming panels along a fold line also perpendicular to the bottom-side panel fold line;
a second pair of medial risers each foldably joined to one of said second pair of end-forming panels along fold lines also perpendicular to said bottom panel fold line and foldably joined together on the medial axis of the carrier carton;
one internal separator panel struck out from each of the second pair of medial risers and foldable therefrom to be adhered by a tab perpendicular to one of the side panels;
another internal separator panel foldable from each of the second pair of riser panels along fold lines adjacent to the said one internal panel struck out from each riser to be adhered by a tab perpendicular to one of said side walls spaced from said corresponding one internal separator panel to form an article well there between;
a medial reinforcing panel foldably joined to one of the second pair of medial risers along a fold line substantially co-extensive with said one internal separator panel struck from said riser and parallel to said bottom-side panel fold line;
separator strips adhered to each of said internal separator panels and said medial reinforcing panel to provide double material thickness between all carried articles;
each pair of risers being folded on the fold line that joins them and being glued together to form the pair of end-forming panels joined to each of them into a complete end for the carrier carton; and
a handle disposed on the medial axis of the carrier above the medial reinforcing panel foldably joined to one pair of medial risers at one end and fixed at its other end to the other pair of medial risers.

4,362,241
APPARATUS FOR COLD DISINFECTION OF DENTAL AND MEDICAL INSTRUMENTS

Robert M. Williams, 705 Kenyon St., NW., Washington, D.C. 20010

Filed Aug. 6, 1980, Ser. No. 175,633
Int. Cl.³ B65D 81/32, 30/22, 81/24; A61L 2/00
U.S. Cl. 206—210 10 Claims



1. A device for disinfecting dental and medical objects, including instruments, comprising,
an envelope of liquid impervious material, said envelope having an opening which permits the entry of an object into the envelope,
a liquid absorbent liner located in said envelope, said liner having an opening which permits the entry of an object into the liner within said envelope, said absorbent liner facing inwardly and being exposed to make physical contact with an object placed within said liner,
said liner being attached to the envelope near the opening of the liner retaining the liner in position relative to the

envelope when an object is being inserted into the envelope,

a cold disinfectant solution located in said envelope for impregnating said absorbent liner,

said envelope and said liner being of flaccid material permitting their deformation and enabling said liner to conform to the outer surface of an object therewithin,

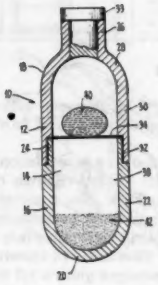
said opening of said envelope being sealable to retain the object in the envelope and preventing the loss of said cold disinfectant solution from said envelope and impregnated liner.

4,362,242

MULTI-COMPARTMENT CONTAINER FOR STORING AND MIXING DENTAL AMALGAM INGREDIENTS, AND METHOD OF USING SUCH A CONTAINER

Jeffery J. Cheetham, 5 Brunsdon St., Bayswater, Victoria 3153, Australia

Filed Mar. 24, 1980, Ser. No. 133,262
Claims priority, application Australia, Apr. 10, 1979, PD8360
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—219 **14 Claims**



5. A self activating multi-compartment container comprising an outer wall defining a chamber, a thin, taut, rupturable partition dividing the chamber into first and second compartments, the first compartment containing a globule of liquid mercury and the second compartment containing a quantity of dental metallic alloy powder, both compartments being of fixed volume and being otherwise devoid of any actuating or rupturing means for rupturing or dislodging the partition, the partition being tautly mounted such that when the container is subjected to a sufficient rapid oscillatory motion in a direction substantially at right angles to the partition the globule of mercury acquires sufficient kinetic energy to rupture the partition so that admixture of the components can take place.

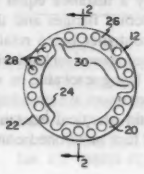
4,362,243

TOOL HOLDER

Margaret J. Deyesso, and George G. Deyesso, both of 118 Oak St., Pembroke, Mass. 02359

Filed Jul. 6, 1981, Ser. No. 281,013
Int. Cl.³ B65D *85/28*
U.S. Cl. 206—373 **2 Claims**

1. The combination of a container and a tool holder insert, the container including an open top and bottom, the bottom closed by a base portion, the top and base portion connected by a continuous wall, the wall having an inner surface, the insert having a continuous, uninterrupted outer facing surface butted against the inner surface between the top and base portion and the insert having an annular configuration with a central aperture formed therethrough and having an inner facing surface and an upper surface, the outer facing surface being spaced from the inner facing surface and butted against the inner surface of the wall, between the top and base portion, and having at least one hole formed through the upper surface and the remaining portion of the insert, the vertical axis of the hole in parallel relation to the vertical axis of the central axis, the hole adapted to hold a tool or the like, the inner facing surface



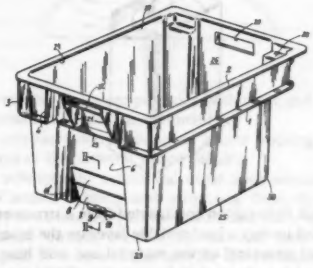
of the tool holder insert having a notch formed therein, the notch adapted to hold a tool or the like.

4,362,244

NESTABLE CONTAINERS WITH INDICIA HOLDER

Jean Cornou, Verrieres les Buisson, France, assignor to Allibert S.A., Grenoble, France

Filed Oct. 7, 1980, Ser. No. 194,897
Claims priority, application France, Oct. 8, 1979, 79 25624
Int. Cl.³ B65D *21/04*; G09F *3/18*
U.S. Cl. 206—507 **5 Claims**



1. An open-topped nestable and stackable container of rectangular outline having a pair of identical oppositely disposed upright sidewalls and first and second oppositely disposed upright endwalls, said sidewalls and said endwalls tapering downwardly, said container having a first outwardly projecting flange formed along the periphery of the open top thereof and a second outwardly projecting flange formed on said container and spaced from said first flange and parallel thereto, a pair of inwardly projecting upright shoulders being formed at the corners of said container where said first endwall meets said sidewalls, each of said shoulders being formed with a horizontal step spaced from the open top of said container and said second endwall being formed with a recessed zone adjacent the bottom of said container for receiving an indicia-carrying card and defined by a vertical wall perpendicular to said bottom and lying inwardly of said second endwall, said vertical wall having a horizontal lip projecting outwardly therefrom and lying in the same plane as said bottom and formed at the free end thereof with an upwardly extending tongue lying inwardly of said second endwall and defining with said vertical wall an upwardly open groove, an inclined portion extending upwardly from said verticall wall to join said second endwall at a height no greater than the spacing between said first and second flanges, said inclined portion being juxtaposed with said upwardly open groove, and a pair of vertical flanges flanking said recessed zone and lying in the same plane as said tongue and defining with said vertical wall a pair of vertical grooves open toward one another and at the upper ends thereof for facilitating the insertion of said indicia-carrying card therein, said container being adapted to receive an identi-

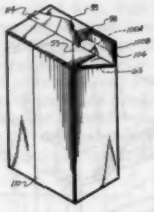
cal container in a nested position therein when said containers are oriented to face in the same direction, the bottom of said identical container being spaced from said bottom of the first mentioned container by a distance equal to the spacing between said first and second flanges and the indicia-carrying card of said identical container being retained out of contact with said first mentioned container and hidden thereby, and said identical container being stackable on said first mentioned container when said containers are oriented in opposite directions, the bottom of said identical container resting on said horizontal steps of said first mentioned container.

4,362,245

LIQUID TIGHT POURING CARTON

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 101,713, Dec. 10, 1979. This application Mar. 19, 1980, Ser. No. 131,755
Int. Cl.[3] B65J 5/74
U.S. Cl. 206—621 24 Claims



1. A liquid tight carton constructed from a structural carton material, and having a heat sealable layer on the inner surface thereof, said structural carton material and said heat sealable layer comprising the material structure of said carton, said carton comprising: a bottom wall, upstanding side walls and upstanding end walls, said side walls and end walls connected to the edges of said bottom wall and to each other to form a receptacle; and a top wall connected to said side walls and said end walls; said top wall comprising extensions of said side walls and said end walls; said extensions being joined together, and comprising main extension panels joined to said side walls and said end walls, and sealing margins on the edge of each said extension remote from said side walls and said end walls; said sealing margins being joined together in the form of a fin seal, producing a fin having multiple thicknesses of said material structure joined together on the top of said carton, said seal having an outer edge disposed toward the outer edge of said fin and an inner edge disposed toward the interior of said carton; said carton having one end, and said fin having a corresponding one end for disposition of opening means thereon; each said thickness of said material structure having a structural line of weakness substantially on said inner edge of said seal and extending along said fin from substantially said one end thereof to a point short of the other end of said fin, said structural lines of weakness being disposed within said structural carton material; said heat sealable layer being devoid of said structural lines of weakness and serving as a effective barrier against leakage of product which may be contained in said carton; said structural lines of weakness on opposing thicknesses of said material structure being in substantial registry with one another, forming an easily removable section of the top wall, said top wall being joined to said end wall on said one end of said carton by an intermediate panel defined by a pair of arcuate score lines extending from one said side wall to another said side wall.

4,362,246

METHOD OF TREATING COLLECTED MAMMAL SEMEN AND SEPARATING SPERM INTO X Y COMPONENTS

Edwin L. Adair, 191 East Orchard, Littleton, Colo. 80123

Filed Jul. 14, 1980, Ser. No. 168,078
Int. Cl.[3] B07G 5/02
U.S. Cl. 209—3.3 13 Claims

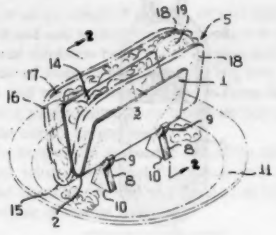
1. A method of preserving semen for use in artificial insemination comprising the steps of:
collecting semen from a mammal;
treating the mammal semen by adding mammal saliva to prevent coagulation;
diluting the semen with a diluting solution; and
storing the semen in a water bath at substantially the body temperature of the mammal.

4,362,247

TACO STAND

Robert Rueda, 1034 SE. 122nd St., Portland, Oreg. 97233

Filed Jun. 24, 1980, Ser. No. 162,362
Int. Cl.[3] A47F 7/00
U.S. Cl. 211—13 1 Claim



1. A portable stand for vertically supporting a taco-like food product on a food plate in position for removal and consumption, wherein such product includes a generally flat rectangular folded baked crust with a stuffing therebeween, said stand comprising a generally V-shaped body having a pair of flat generally rectangular diverging walls concavedly joined at their lower edges, said body having an open upper end, spaced supporting leg means for vertically supporting said body, said leg means having generally flat and downwardly flared sides with flattened lower ends for flatly resting on said plate, the upper ends being concavedly recessed to snugly accommodate the concaved lower end of said body, and adhesive means interposed between said mating concavities for removably mounting said leg means thereon, whereby said taco-like product is downwardly positioned between said walls and engages with said concavity so as to be vertically arranged between and flatly engaged by said walls and relative to the plate.

4,362,248

ORGANIZATIONAL AID DEVICE

Jorge O. Vilanova, Calle Balmes 361, Barcelona, Spain

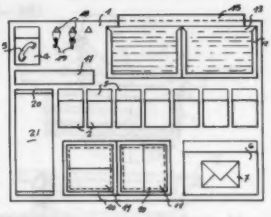
Filed Sep. 19, 1979, Ser. No. 76,931
Claims priority, application Spain, Sep. 30, 1978, 238.455[U]
Int. Cl.[3] A47F 7/00
U.S. Cl. 211—50 3 Claims

1. An organizational aid device comprising:
support means having a front face and provided with a plurality of compartments accessible from the front of said support means, one of said compartments being constructed and arranged for receiving mail;
respective compartment-identifying indicia associated with at least some of said compartments;
a cardholder mounted on said front face;
a plurality of cards each bearing a respective marking denot-

ing a respective period of time, each card having a surface-portion for the recording thereon of information relating to said respective period, said cards being removably and interchangeably mounted in mutually overlying relationship in said cardholder, said cardholder and cards being constructed and arranged so that at least a part of said surface-portion of the front one of said cards is visible and accessible from the front of the device;

a generally planar carrier member for a notepad;

mounting means for mounting said carrier member on said support member at an angle inclined to the front face thereof such that said carrier member is at an angle appropriate for writing on a notepad supported on said carrier member;



means for removably mounting an information-bearing element on said front face with information on said element displayed;

a calendar card mountable in a certain one of said compartments so as to partially project therefrom, said certain compartment having a wall, and spring means located in said certain compartment for urging said card against said wall, whereby said card may be held projecting from said certain compartment by selectively varying amounts;

at least one holder for writing implements, said holder being mounted on said front face; and

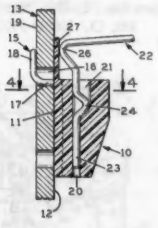
a plurality of hook means on said front face for detachably securing small objects to said support means.

4,362,249

POSITIVE LOCKING MERCHANDISE HOOK

David R. Thalenfeld, Beechhurst, N.Y., assignor to Trion Industries, Inc., Garden City, N.Y.

Filed Jun. 16, 1980, Ser. No. 160,109
Int. Cl.³ A47F 7/00
U.S. Cl. 211—59.1 **13 Claims**



1. In a merchandise display device of the type having a base member, panel engaging lugs extending rearwardly and upward from the upper back edge area of said base member, and merchandise support means extending forwardly from said base member, the improvement which comprises

(a) said merchandise support means comprising a wire-like member movably mounted on said base member,

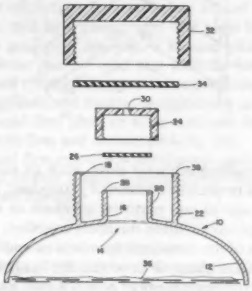
(b) said wire-like member having locking portions adapted to closely confront or bear upon the front face of a display panel, at a level above the upper back edge of said base section, to provide substantially positive locking of said display device to said panel board.

4,362,250

CONTAINER FOR STORING REACTIVE OR VOLATILE MATERIAL

Auburn B. Cottingham, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,660
Int. Cl.³ B65D 41/04
U.S. Cl. 215—247 **7 Claims**



1. A reusable container provided with inner and outer seals for material stored therein, comprising:

(a) a container body having an access opening providing access to the material stored therein;

(b) a substantially cylindrical outer neck extending about said access opening and projecting from the container body as an integral part therewith, said outer neck having external threads formed therearound such that it is adapted to form an outer seal for the container; and

(c) a substantially cylindrical inner neck extending from said container body as an integral part therewith and being in spaced relationship within said outer cylindrical neck and being arranged coaxially relative thereto, said inner cylindrical neck having external threads formed therearound such that it is adapted to form an inner seal for the container, and said inner cylindrical neck projecting from the container body for a distance less than that of the outer cylindrical neck so as to have the inner cylindrical neck recessed within the outer cylindrical neck, whereby an inner cap can be threadedly engaged over said inner cylindrical neck to provide an inner seal therefor, and an outer cap can be threadedly engaged over said outer cylindrical neck to provide an outer seal over both the inner cap and the outer cylindrical neck.

4,362,251

SPACE DIVIDING ASSEMBLY

Douglas S. Marling, 2511 Elizabeth St., Janesville, Wis. 53545

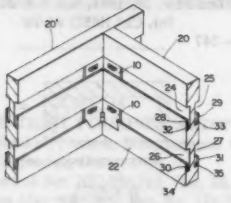
Filed Jun. 20, 1980, Ser. No. 161,598
Int. Cl.³ B65D 6/24, 25/06
U.S. Cl. 220—22 **9 Claims**

1. A space dividing assembly for dividing a space so as to define a plurality of separate compartments or the like, said assembly comprising:

a plurality of partition members of flat, generally rectangular shape and including at least one longitudinal groove formed in each of the major oppositely facing surfaces of said partition member and extending from one end of said surfaces to the other, said partition members further including flexible first rails which extend substantially parallel to the major surfaces of the partition member from

parts of the partition member which define one side wall of said grooves so as to cover a portion of said grooves over the length of said grooves and to thereby form channels therewith; and

a plurality of connector members for connecting said partition members together to form the space dividing assembly, each of said connector members including a pair of generally planar, orthogonally extending flanges joined to



each other along adjacent sides, each of said flanges engaging in a respective channel of juxtaposed, orthogonally disposed ones of said partition members so as to connect said juxtaposed partition members together, the planes of the flanges of the connector members extending parallel to the rails of the channels in which the flanges are engaged and each connector member being of such a size and shape so as to lie substantially entirely within the channels of the partition members connected together thereby.

4,362,252

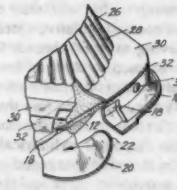
SINGLE-USE SHEET PLASTIC CLOSURE FOR APPLICATION TO RIMMED CONTAINERS

Stewart M. Graff, c/o Douglas Stephens Plastics, Inc., 101 E. Main St., Little Falls, N.J. 07424

Continuation-in-part of Ser. No. 281,477, Jul. 9, 1981, abandoned. This application Mar. 5, 1982, Ser. No. 354,141

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **14 Claims**



1. A one-piece sheet plastic peripherally rupturable single-use closure for application to rimmed containers of the same shape and of the type usable to hold edible goods comprising:

(a) a crown having a vertical plane of symmetry;

(b) a skirt downwardly dependent from the periphery of the crown;

(c) means in one piece with the skirt for detachably and mechanically tightly locking said closure to the rim of the container; and

(d) a pull tab in one piece with the closure at the lower edge of the skirt for destroying the integrity of the periphery of the closure when bent back and pulled, said pull tab extending angularly outwardly to form a handle access portion and having an edge spaced away from the skirt to define a notch with a narrow apex at the outer edge of the skirt, whereby when the pull tab is bent and has a tensile force applied thereto it will start a tear which will progress from the apex of the notch through a portion of the periphery of the closure to destroy the integrity of said periphery and permit the closure to be removed from the container and discarded.

4,362,253

TAMPER PROOF CLOSURE

Michael Wortley, Waterlooville; Michael Hughes, Denmead, and Robert Povey, Eastleigh, all of England, assignors to Cope Allman Plastics Limited, England

Continuation of Ser. No. 183,647, Sep. 3, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 326,118

Claims priority, application France, Sep. 4, 1979, 79 22059

Int. Cl.³ B65D *17/40*

U.S. Cl. 220—276 **5 Claims**

1. A re-closable tamper-proof snap-on closure assembly comprising a closure cap, said cap having a peripheral skirt, a tamper-proof strip below said skirt and joined to said skirt by a circumferentially extending weakened breakable web, said strip being free of any graspable finger tab, and a co-operating container neck onto which said cap fits, said neck being provided with an external circumferentially extending bead formation under which said strip engages when said cap is in place, said cap being provided with an outwardly extending finger-engageable lug, a gap formed in said breakable web in the region of said lug allowing a user to push upwards on the region of the cap that carries said lug thereby separating said cap from said strip initially in said region at opposite sides of said gap, and the arrangement being such that continued upward pressure on said lug flexes said cap and progressively tears said web until said cap and tamper-proof strip are both free of said container neck.

4,362,254

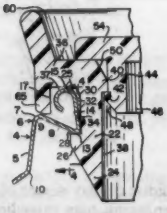
CLOSURE AND CONTAINER NECK STRUCTURE THEREFOR

Donald J. Roth, Westport; Charles S. Kubis, Weston, both of Conn., and John Walter, Evergreen Park, Ill., assignors to The Continental Group, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 291,594, Aug. 10, 1981. This application Dec. 2, 1981, Ser. No. 326,956

Int. Cl.³ B65D *39/00*

U.S. Cl. 220—307 **17 Claims**



1. A neck and closure assembly for a container wherein said neck comprises:

a tubular neck member integrally formed with a portion of a container and extending axially from the remainder of the container for receiving a closure,

said neck member including a radially and axially inturned lip, a retainer ring carried by said lip extending axially of the container,

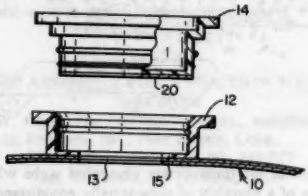
said closure comprising a tubular element mounted within said ring and having means in fluid-tight engagement with said tubular neck member.

4,362,255

BARRIER SPOUT AND CAP FOR FLEXIBLE BAGS OR POUCHES

Curtis J. Bond, Marion, Ohio, assignor to Liqui-Box Corporation, Worthington, Ohio

Filed Oct. 24, 1980, Ser. No. 200,528
Int. Cl.³ B65D *39/04*
U.S. Cl. 222—107 **9 Claims**



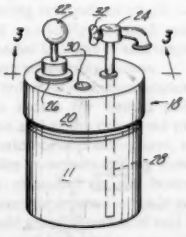
9. A flexible bag formed of a laminate including a gas barrier layer having a spout and cap assembly mounted thereon in association with a filling and dispensing opening, said assembly comprising a tubular spout and a removeable and replaceable sealing cap mounted thereon, said spout having an attaching flange which is heat-sealed to said bag laminate with said flange carrying a gas barrier layer, said cap carrying a transversely-extending gas barrier layer which extends completely across said opening and overlaps said barrier layer on the attaching flange; said spout and cap being plastic, said spout comprising a tubular body with its attaching flange axially-inwardly disposed therein and said cap comprising a tubular body which is inserted into said spout tubular body and which carries its barrier layer at an axially-inwardly disposed position, said spout attaching flange extending radially inwardly and the barrier layer on the cap contacting the outer surface of said radially inwardly-extending flange.

4,362,256

BEVERAGE DISPENSER

Randolph J. Polasek, 8900 Gittins, Union Lake, Mich. 48085

Filed Jan. 25, 1980, Ser. No. 115,344
Int. Cl.³ B67D *5/54*
U.S. Cl. 222—383 **6 Claims**



1. A removable, reusable dispenser for a beverage container having first and second frangible areas, said frangible areas being breakable to form first and second openings in said container, said dispenser comprising:

pressure means having an elongated air inlet adapted to be sealingly connected to said container in said first opening for forcing a gas into said container;

a tap having an elongated fluid inlet, a valve, and a spout, said fluid inlet being adapted to be sealingly connected to said container in said second opening so that said fluid inlet communicates with the interior of said container whereby fluid may be selectively drawn out through said spout by operating said valve;

first means for sealing the air inlet of said pressure means in said first opening;

second means for sealing the fluid inlet of said top tap in said second opening;

wherein said first sealing means comprises a first pliable gasket disposed about said air inlet and insertable through said first opening, a first rigid plate affixed to said air inlet adjacent said first gasket, said first plate being insertable through said first opening, a second pliable gasket disposed about said air inlet and slidable thereon, a second rigid plate slidably disposed on said air inlet adjacent said second gasket, and means for tightening said second plate against said first plate so as to seal said first opening between said first and second gaskets; and

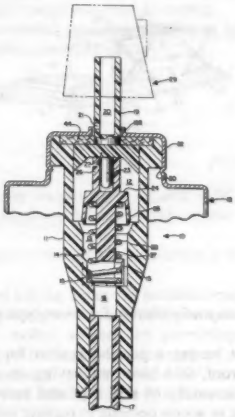
wherein said first opening is slit-shaped, and the diameter of said first pliable gasket is greater than the length of said slit-shaped opening.

4,362,257

PRESSURE FILLABLE DISPENSING DEVICE

Joseph J. Shay, Manchester, N.H., assignor to Ethyl Products Company, Richmond, Va.

Filed May 5, 1980, Ser. No. 146,513
The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.
Int. Cl.³ E65D *83/00*
U.S. Cl. 222—402.2 **7 Claims**



1. A dispensing device for a pressurized liquid container capable of delivering metered quantities of an aerosol composition and having a discharge tube through which the container can be filled with fluids under pressure comprising:

a. a generally cylindrical chamber including an upper chamber and a lower chamber, said generally cylindrical chamber being adapted to be sealed into a neck of said container, said upper chamber being closed at the upper end with respect to said container by a seal means;

b. discharge tube means mounted in said seal means and extending therethrough into said generally cylindrical chamber, said discharge tube being resiliently biased toward the upper end of said upper chamber and being movable axially in said generally cylindrical chamber, said

discharge tube having a skirt at the lower end thereof which extends outwardly to the inner walls of said upper chamber to assist at maintaining said discharge tube in the center of said upper chamber and which strikes said seal means to limit the upward movement of said discharge tube; and,

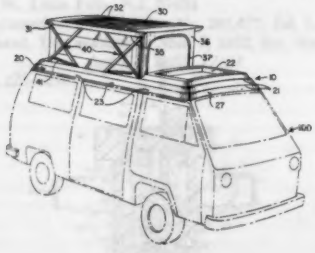
c. a cup-shaped piston member connected to said discharge tube with its open end towards the lower end of said lower chamber, said cup-shaped piston member having a laterally resilient rim with the entire periphery thereof sliding directly against the side wall of said lower chamber when said discharge tube is depressed a predetermined amount to isolate a metered quantity of fluid within said upper chamber, said rim of said cup-shaped piston member being sufficiently resilient to allow fluids introduced under pressure through said discharge tube during filling of said container to flow between said rim and said side wall of said lower chamber, said lower chamber having a plurality of ribs connected to said side wall of said lower chamber for mechanically deflecting said rim inwardly.

4,362,258

ADD-ON ROOF ASSEMBLY FOR VAN

George M. French, Olympia, Wash., assignor to Frenkin Corporation, Yelm, Wash.

Filed Dec. 1, 1980, Ser. No. 211,573
Int. Cl.³ B60P *3/34*
U.S. Cl. 224—309 **11 Claims**



1. An add-on roof assembly for a van-type vehicle, comprising:

a base unit having a peripheral skirt for fitting over the vehicle roof, said base unit having an upwardly facing channel inwardly of said skirt and surrounding an area including an access opening to register with a cutout in the vehicle roof,

an elevatable top assembly moveable between a lowered position closing said access opening and a raised position spaced above said base unit, said top assembly having a ceiling section and roof section above and wider than the ceiling section to provide overhang portions at the sides of the ceiling section, said overhang portions being downturned to engage the channel when the top assembly is in its lowered position, and

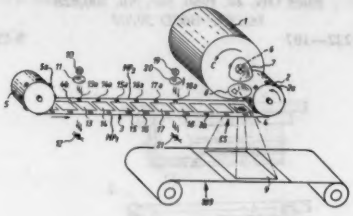
a pair of roof support means connected to said top assembly and base unit at each side for supporting the top assembly in its raised position, the upper end of the support means being located directly beneath said roof overhang portion and the lower end thereof being located in said channel.

4,362,259

APPARATUS FOR STEPWISE TRANSPORT OF PHOTOGRAPHIC FILM OR THE LIKE

Otto Stemme, Munich; Eduard Wagensonner, Aschheim, and Bernhard von Fischern, Ottobrunn, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,837
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006241
Int. Cl.³ B65H *17/26*
U.S. Cl. 226—123 **15 Claims**



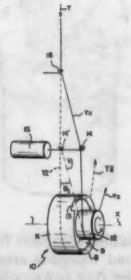
1. Apparatus for transporting elongated webs wherein selected ones of a plurality of substantially equidistant portions are denoted by automatically detectable indices, particularly for transporting through a photographic copying machine webs of exposed and developed photographic film certain frames of which are denoted by indices in the form of holes or the like, comprising variable-speed motor means operable to transport a web in a predetermined direction along a predetermined path; first and second monitoring means adjacent to said path and respectively arranged to generate first and second signals on detection of indices in said path, said second monitoring means being located downstream of said first monitoring means, as considered in said direction; and regulating means for respectively reducing the speed of and temporarily arresting said motor means in response to said first and second signals and for increasing the speed of said motor means in the absence of indices intermediate said first and second monitoring means.

4,362,260

YARN FEEDING APPARATUS

Katsumi Hasegawa, Kusatsu; Takahiro Kawabata, Otsu, and Hiroshi Ueda, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,944
Claims priority, application Japan, Dec. 12, 1979, 54-160376
Int. Cl.³ B65H *51/04*
U.S. Cl. 226—190 **15 Claims**



1. A yarn feeding apparatus for transferring a continuously

supplied yarn from a yarn supply source to a yarn takeup apparatus, the yarn feeding apparatus comprising:

(a) a stepped roller comprising

(i) a small diameter portion for initially receiving the yarn during a threading operation of the yarn from the yarn supply source to the yarn takeup apparatus,

(ii) a large diameter portion for supporting the travelling yarn during the normal feeding of the yarn through the yarn feeding apparatus, and

(iii) yarn hooking means on the peripheral surface of the stepped side of the large diameter portion for hooking the yarn to assist in the transfer of the yarn from the small diameter portion to the large diameter portion,

(b) driving means for positively rotating the stepped roller, and

(c) means on the upstream side of the stepped roller for shifting the travelling yarn position from a position aligned with the small diameter portion to a position aligned with the large diameter portion.

4,362,261

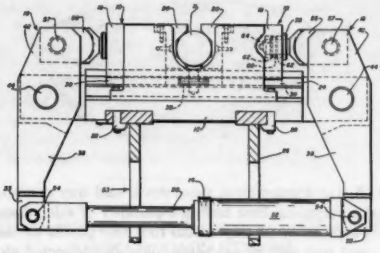
CLAMP ASSEMBLY FOR A FRICTION WELDING MACHINE

Francis W. Cook, Jr., Newington, Conn., assignor to Litton Industrial Products, Inc., New Britain, Conn.

Filed Sep. 17, 1980, Ser. No. 188,057

Int. Cl.³ B23K *20/12*; B23Q *3/06*

U.S. Cl. 228—2 **2 Claims**



1. A friction welding machine clamp assembly for securing a workpiece against rotation comprising

a pair of opposed chuck means,

means for supporting said pair of chuck means for relative slidable horizontal displacement,

said supporting means being a single element uninterrupted structure capable of having applied thereto a pure tension horizontally acting load,

means for controlling the displacement of said pair of opposed chucks so that said pair of chucks will be conjointly and equally displaced,

means for displacing said pair of chuck means having

first and second vertically oriented arms each pivotally secured at a medial location to said single element uninterrupted structure supporting means,

first and second link means each connected at one end to one of said chuck means for limited pivotal displacement relative thereto and at the other end pivotally connected to the top of said corresponding arm, and

hydraulic cylinder means extending horizontally between and pivotally mounted on the bottom of said arms, whereby balanced compressive loads are applied through both ends of said arms by means of said hydraulic cylinder means putting said supporting means into a pure tension load thereby preventing said supporting means from bending and

a base for supporting said supporting means, said base having opening means for receiving said hydraulic cylinder means.

4,362,262

METHOD OF FORMING A COMPOSITE MATERIAL

Joseph Winter, New Haven; William Brenneman, Cheshire, and Julius C. Fister, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 157,997, Jun. 9, 1980, Pat. No. 4,330,599. This application Sep. 21, 1981, Ser. No. 303,803

Int. Cl.³ B23K *20/04*

U.S. Cl. 228—117 **9 Claims**

1. A method of forming a metallurgically firmly bonded composite material having a smooth external surface which comprises: providing a copper core material in strip form in the hard temper having a minimum strength of 51,000 psi yield strength at 0.2% offset; providing a copper alloy cladding in strip form being fully annealed to an average grain size of at least 10 microns and having a maximum strength of less than 15,000 psi yield strength at 0.2% offset; and rolling together said core and cladding in an unheated condition in a single pass with a reduction of 50 to 75% to provide a metallurgically firmly bonded composite.

4,362,263

SOLDERABLE SOLVENTLESS UV CURABLE ENAMEL

James R. Kwiecinski, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

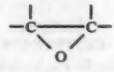
Filed Apr. 24, 1980, Ser. No. 143,203

Int. Cl.³ B05D *3/06*; B32B *15/08*; H01B *3/40*

U.S. Cl. 228—263 A **9 Claims**

1. An insulated magnet wire comprising an elongated conductor coated with a UV cured solventless composition which does not char but melts away from solder when exposed thereto and which comprised prior to curing:

(1) a totally saturated compound having at least two rings each containing an epoxy group:

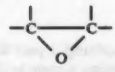


(2) up to 35% by weight based on total solids of 3,4-epoxycyclohexylmethyl- 3,4-epoxycyclohexane carboxylate; and

(3) a UV curative which generates a cation in the presence of UV light.

2. A method of joining a piece of insulated magnet wire to a conductor comprising contacting said juxtaposed piece and conductor with molten solder, and permitting said molten solder to solidify, where said insulated magnet wire comprises an elongated conductor coated with a UV cured solventless composition derived from the cure of a composition comprising:

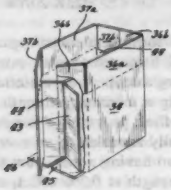
(1) a totally saturated compound having at least two rings each containing an epoxy group:



(2) up to 35% by weight based on total solids of a modifying resin which is co-reactive with said totally saturated compound, and which does not char or prevent UV cure; and

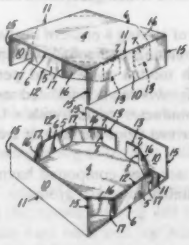
(3) a UV curative which generates a cation in the presence of UV light.

4,362,264
CONTAINER CONSTRUCTION
Jack E. Duncan, Vincennes, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Feb. 20, 1981, Ser. No. 236,505
Int. Cl.³ B65D 5/48
U.S. Cl. 229—27 22 Claims



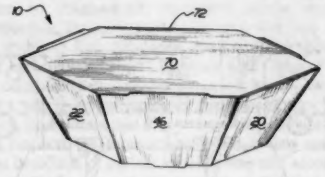
1. A container formed from a blank of foldable sheet material for accommodating a plurality of articles arranged in segregated groups, said container comprising a pair of upright non-sectional first walls disposed in opposed space relation; a pair of upright sectional second walls disposed in opposed spaced relation, each second wall including a pair of first panel sections each having a peripheral portion foldably connected to an adjacent first wall; a sectional article-supporting bottom wall coacting with said first and second walls to form an open top chamber for accommodating the groups of articles, said bottom wall including a pair of second panel sections arranged in side-by-side relation with said first panel sections and being angularly disposed relative to said first walls; and a sectional partition wall disposed intermediate and spaced from said first walls and extending between said second walls, said partition wall forming said chamber into contiguous compartments, each compartment accommodating a predetermined number of article groups, said partition wall including a pair of third panel sections disposed in face to face relation and having first peripheral portions thereof foldably interconnected, second peripheral portions being connected to said first panel sections by reinforcing flaps, and third peripheral portions thereof connected to a bottom wall section.

4,362,265
CONTAINER
Donald L. Williams, Morris, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed May 1, 1981, Ser. No. 259,652
Int. Cl.³ B65D 5/26, 5/68
U.S. Cl. 229—32 1 Claim



1. A container comprising a pair of cooperating, identical trays, each tray comprising a main body portion, opposed side walls being of uniform height and together forming an octagon and extending upwardly from the main body portion, opposed ends walls extending upwardly from said main body portion, said end walls being approximately twice as tall as said side walls, said trays being inverted and rotated 90° relative to each other so that the taller end walls of one tray are telescoped over the shorter side walls of the other tray with the end walls completely covering the side walls to produce a seamless container, said end walls and said side walls being hingedly connected to said main body portion and each side wall comprising (1) a central portion hingedly attached to said main body along a side edge thereof and (2) outer portions angularly attached to opposite ends of said central portion along first fold lines and (3) end flaps angularly attached to the opposite ends of said outer portions along second fold lines parallel to said first fold lines, each end flap being attached to the inner face of the adjacent end wall completely inwardly from the end edges of said end wall, each of said end flaps being of a length substantially less than one-half of the width of an end wall wherein an outer edge of the side wall central portion of one tray will abut and be supported on an outer edge of the end flap of the other tray when said trays are inverted and rotated 90° relative to each other and one of said trays seated on the other to form a closed container.

4,362,266
NON-GLUED TAPERED TRAY
George P. Webinger, Robbinsdale, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Mar. 2, 1981, Ser. No. 239,311
Int. Cl.³ B65D 5/22
U.S. Cl. 229—33 5 Claims

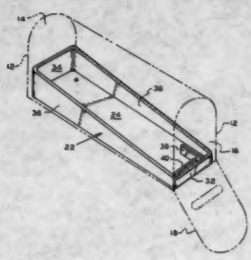


1. A tray formed from sheet stock, said tray comprising:
(a) a polygonal base having a plurality of side edges;
(b) a plurality of trapezoidal first side panels on said tray, said first side panels being foldably connected along the shorter of their parallel edges to respective side edges of said base, said first side panels all extending upwardly and outwardly from said side edges of said base to form a top of said tray which is the same polygonal shape as said base but larger in area than the area of said base;
(c) a plurality of second trapezoidal side panels foldably connected to the upper edge of each of alternate ones of said first side panels along the longer parallel edge of said first and second side panels, said second side panels being folded down adjacent said respective alternate ones of said first side panels to overlie the latter, each of said second side panels being provided with a projecting tab at the shorter of its parallel edges, with said projecting tabs being received in cooperating slots formed in the fold connections between said base and said alternate ones of said first side panels to retain said second side panels in said overlying positions;
(d) means forming a medial slot in the fold connections between said first and second side panels; and
(e) pairs of side flaps foldably connected one to each side edge of intermediate ones of said first side panels, the latter of which are disposed intermediate said alternate ones of said first side panels; each of said side flaps being sandwiched between the adjacent pair of said alternate ones of said first side panels and said second side panels, and each of said side flaps including a locking tab on its upper edge with said locking tabs engaging said medial slots to retain all of said side panels in their upwardly and outwardly extending positions.

4,362,267
MAIL BOX TRAY

Homer A. Donaldson, 3475 Wisner Hwy., Adrian, Mich. 49221

Filed Oct. 14, 1980, Ser. No. 196,737
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—17 3 Claims

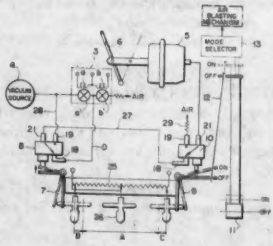


1. A mail box tray for slidable support within a mail box to facilitate access to the mail box contents comprising, a tray body of a molded homogeneous synthetic plastic material having a bottom panel and lateral side walls, a front wall and a rear wall extending upwardly from said bottom panel, said rear wall having a greater vertical dimension than that of said front wall, said side walls intersecting said rear and front walls and having a vertical dimension at the intersection with said walls substantially corresponding to that of the intersected wall whereby the vertical dimension of said side walls decreases from said rear wall to said front wall, a first ridge homogeneously extending upwardly from said bottom panel in spaced parallel relationship to one of said side walls for positioning the edge of an envelope upon said bottom panel, and a second ridge homogeneously extending upwardly from said bottom panel in spaced parallel relationship to said front wall defining a coin receiving slot with said front wall, the exterior of said bottom panel and side walls being free of protuberances.

4,362,268
AIR CONDITIONING SYSTEM FOR AN AUTOMOTIVE VEHICLE COMPARTMENT

Yukio Shimada; Naoyoshi Suzuki; Toshio Ohashi, all of Yokohama, and Yasushi Inoshita, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 16, 1980, Ser. No. 197,678
Claims priority, application Japan, Oct. 24, 1979, 54-136450
Int. Cl.³ G05D *23/13*
U.S. Cl. 236—13 11 Claims



6. A defrost mode fixing means for a vehicle air conditioning system including:

(a) a vacuum source (4);

(b) a double solenoid vacuum device (3) having two valves, one valve linked with said vacuum source which opens to admit a vacuum from said vacuum source thereto when the corresponding solenoid is energized in response to a temperature adjustment electronic control circuit, and the other valve which opens to atmospheric pressure when the corresponding solenoid is energized in response to said temperature adjustment electronic control circuit, said double solenoid vacuum device producing a controlled vacuum pressure according to the opening rates of said two valves;

(c) a vacuum power servomechanism (5) having a rod extended therefrom whose stroke position depends on the controlled vacuum pressure from said double solenoid vacuum device, said rod extending at a first extreme position when the double solenoid vacuum device is open to atmospheric pressure;

(d) an air mix door (6), operatively connected to the rod extended from said vacuum power servomechanism for angular movement corresponding the stroke position of the rod for adjusting the rate of air passing through an air heating element of an air conditioning duct to provide tempered air to a vehicle compartment, said air mix door being positioned for maximum air heating when the rod is positioned at said first extreme position; and

(e) a mode selector (13) having an actuating member for operating an air blasting mechanism to direct air into said vehicle compartment in a defrost mode of operation, said defrost mode fixing means comprising:

(a) a first three-way switching member (10), connected between said double solenoid vacuum device and said vacuum power servomechanism, and connected to atmospheric pressure, said switching member switching from a first position communicating said controlled vacuum pressure to said power servomechanism to a second position communicating atmospheric pressure to said power servomechanism in response to actuation of a control member; and

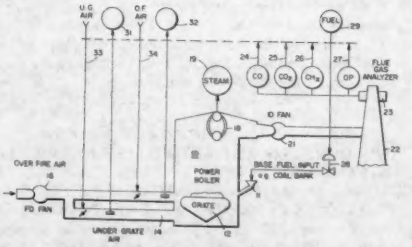
(b) a manually operable switching member (11, 12, 31, and 32) for simultaneously actuating said actuating member and said control member,

whereby, upon actuation of said switching member, said defrost mode is effected simultaneously with maximum air heating.

4,362,269
CONTROL SYSTEM FOR A BOILER AND METHOD THEREFOR

Laxmi K. Rastogi, San Jose; Arthur D. Allen, and John Y. H. Tsing, both of Cupertino, all of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed Mar. 12, 1981, Ser. No. 243,170
Int. Cl.³ F23N *1/08*
U.S. Cl. 236—14 10 Claims



1. A control system for a boiler producing steam having a fire bed of fuel where air is admitted under or at the fire bed (undergrate air) to accomplish the preliminary burning of fuel in said fire bed and air is admitted over the fire bed (overfire air) for completing combustion, said system comprising: means associated with the exhaust stack of said boiler for sensing carbon dioxide and carbon monoxide in the flue gas; means for controlling the amount of said undergrate air admitted into

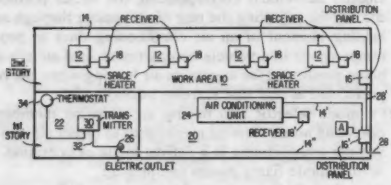
said boiler as a function of said carbon dioxide or steam/fuel ratio; means for controlling the amount of said overfire air admitted into said boiler as a function of said carbon monoxide.

4,362,270

ELECTRONIC TEMPERATURE CONTROL SYSTEM

Robert J. Cleary, Levittown, and Ronald R. Chin, Flushing, both of N.Y., assignors to Energy Master, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 798,142, May 18, 1977, Pat. No. 4,132,355. This application Dec. 20, 1978, Ser. No. 971,409
Int. Cl.³ F23N *5/20*
U.S. Cl. 236—46 R 1 Claim



1. A control system for a plurality of temperature controlling devices, each of which is disposed in a structure and is connected to an existing electrical power distribution network and each including a control circuit responsive to temperature conditions at a location in said structure to connect the device to the electrical conductor network for energization, comprising:

a control transmitter responsive to each of a plurality of combinations of temperature and the passage of preselected periods of time to impose electrical pulses of different predetermined control frequencies on said conductor network at a pulse rate corresponding to the power supply frequency,

said transmitter including:

a plurality of fixed frequency oscillators each operable at a frequency greater than the power supply frequency,

first gating circuit means for permitting each of said oscillators to provide pulses at a rate corresponding to the power supply frequency,

a time clock connected to each of said oscillators to prevent oscillation of the oscillator except at a time period determined by the time clock,

a master thermostat for monitoring temperature within the structure, and

a second gating circuit means for imposing said oscillator pulses on said conductor network responsive to the temperature monitored by the master thermostat; and,

a receiver associated with each of said plurality of devices responding to the presence of pulses of a different one of said predetermined control frequencies to render the control circuit for the device inoperative.

4,362,271

PROCEDURE FOR THE ARTIFICIAL MODIFICATION OF ATMOSPHERIC PRECIPITATION AS WELL AS COMPOUNDS WITH A DIMETHYL SULFOXIDE BASE FOR USE IN CARRYING OUT SAID PROCEDURE

Robert Montmory, St. Islier, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Paris, France

Filed Oct. 29, 1980, Ser. No. 201,802
Claims priority, application France, Nov. 2, 1979, 79 27135; Jun. 20, 1980, 80 13745
Int. Cl.³ A01G *15/00*; E01H *13/00*
U.S. Cl. 239—2 R 33 Claims

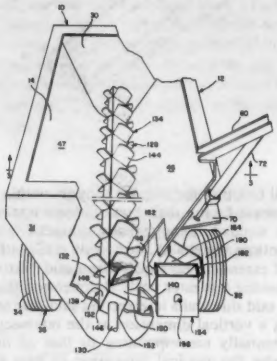
1. A process for artificially modifying atmospheric precipitation comprising dispersing into an atmosphere capable of giving rise to precipitation microdroplets of a liquid composition containing dimethyl sulfoxide as the principal active ingredient.

4,362,272

MANURE SPREADER WITH MULTIPLE SIDE AUGER

Mervin G. Martin, Myerstown, Pa., assignor to Hedlund Manufacturing Co., Inc., Boyceville, Wis.

Filed Jul. 28, 1980, Ser. No. 172,976
Int. Cl.³ A01C *23/00*
U.S. Cl. 239—7 42 Claims



1. A manure spreader including:

a container for holding manure to be spread;

an impeller means arranged for rotation within said container to propel manure to an opening in said container;

a first drive system connected to the impeller means to rotate said impeller means at a first slow, rotative speed;

said container having an opening to provide an outlet through which manure can exit from said container;

spreader means positioned outwardly adjacent to the opening in said container to receive manure and to spread the manure in a spray pattern;

said spreader means comprising a chamber and a spinner, said spinner including a shaft and being adapted for rotation within said chamber to propel manure in a spray pattern, said spinner comprising at least two scoop sections angularly offset from one another on said shaft;

said spinner being adapted to rotate at a second, fast, rotative speed; and

a second drive system interconnected between said first drive system and said spinner to rotate said spinner at a second, fast, rotative speed.

4,362,273

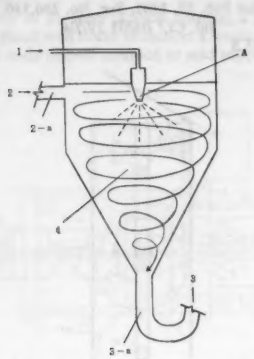
PRODUCTION OF DYESTUFF POWDERS

Junzaburo Seino, Osaka; Hiroshi Ikeda, Nara; Washohati Abo; Iwao Minami, both of Osaka, and Joji Fuji, Aomori, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 6, 1980, Ser. No. 204,710
Claims priority, application Japan, Nov. 28, 1979, 54-154751
Int. Cl.³ F26B *3/10*
U.S. Cl. 239—128 11 Claims

1. A method for producing dyestuff powders by spray drying a dye dispersion or solution comprising spray drying in a spray dryer which includes a drying room with an inlet for introducing hot air into the drying room and an outlet for discharging hot air with dyestuff powders from the drying room, an atomizer for spraying the dye dispersion or solution therethrough positioned at the upper part of the drying room and an acceleration means for increasing the velocity of hot air; said method further comprising maintaining the tempera-

ture at the inlet at between 110° and 260° C., the temperature at the outlet at between 60° C. and 80° C. and the velocity of



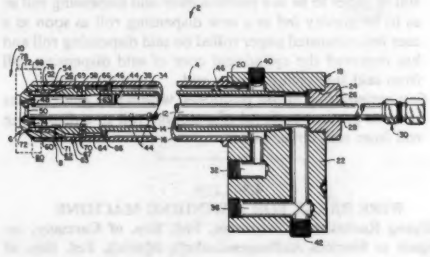
the hot air at the position just under or around the atomizer at between 5 and 80 m/sec.

4,362,274

DUAL FUEL ATOMIZER

Albert W. Davis, Tahoe City, Calif., assignor to Coen Company, Inc., Burlingame, Calif.

Filed Jun. 27, 1980, Ser. No. 163,556
Int. Cl.³ F23D *11/16*
U.S. Cl. 239—419.3 **13 Claims**



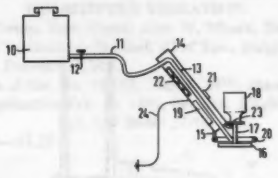
1. A nozzle for the simultaneous atomization of first and second liquid fuels comprising first and second conduits for independently flowing the first and second fuels, respectively, towards a discharge end of the nozzle, a third conduit for flowing a pressurized fuel atomizing medium towards the discharge end, means fluidly connected with the third conduit defining first and second passages for flowing first and second streams of the medium from the third conduit, first atomizing means in fluid communication with the first passage for contacting the first fuel with the first medium stream so that the first medium stream causes the atomization of the first fuel outside the nozzle, and second atomizing means in fluid communication with the second passage for contacting the second fuel with the second medium stream so that the second medium stream causes the atomization of the second fuel within the nozzle and prior to its discharge therefrom.

4,362,275

SPRAYERS

Ronald A. Coffee, Haslemere, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 29, 1980, Ser. No. 201,971
Claims priority, application United Kingdom, Nov. 19, 1979, 7935554
Int. Cl.³ B05B *3/10*
U.S. Cl. 239—700 **6 Claims**



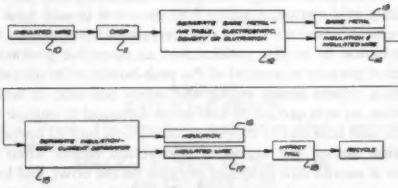
1. An agricultural sprayer, comprising a rotatable conductive sprayhead in the form of a disc or cup, means for supplying spray liquid from a reservoir to an inner surface of the sprayhead, an electric motor for rotating the sprayhead about its axis at a rate of 1000 to 8000 revolutions per minute, a circular induction electrode disposed adjacent the sprayhead rim, a high-voltage generator for charging the electrode to a potential in the range 1–3 kilovolts, and means for earthing the sprayhead.

4,362,276

PROCESS AND APPARATUS FOR RECOVERING METAL AND PLASTIC FROM INSULATED WIRE

Booker W. Morey, Pasadena, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 8, 1977, Ser. No. 858,633
Int. Cl.³ B02C *23/14*
U.S. Cl. 241—24 **15 Claims**



1. In a process for separating plastic insulated, non-ferrous, electrical conducting wire into three fractions for recovering metal and plastic, the steps of:

comminuting the plastic insulated, non-ferrous, electrical conducting wire to reduce the wire to small pieces;

separating the small pieces into a first bare metal fraction and a second fraction containing plastic and plastic covered metal; and

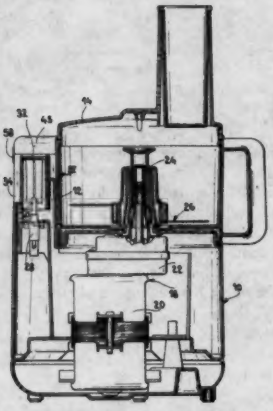
separating the plastic of said second fraction by eddy current separation from the plastic covered metal, providing a bare metal fraction, a plastic fraction, and a plastic covered metal fraction.

4,362,277

DOMESTIC ELECTRICAL FOOD PROCESSING APPLIANCE

Jacques H. J. Amiot, Alencon, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France

Filed Sep. 9, 1980, Ser. No. 185,406
Claims priority, application France, Sep. 21, 1979, 79 23558
Int. Cl.³ B02C *18/00*
U.S. Cl. 241—37.5 8 Claims



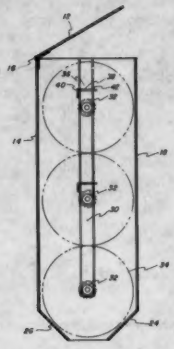
1. Electrical food processing appliance comprising a base supporting a work bowl and having a boss adjacent to said bowl, a detachable cover for the work bowl, engaging means arranged upon relatively rotary movement between the cover and the bowl to hold the cover in a closed position on the bowl, a motor unit mounted in said base, said motor unit having an output shaft extending within said work bowl, a work tool arranged within said bowl and carried by said output shaft, a switch for controlling said motor unit, a push-button for actuating said switch mounted in said boss for movement between a rest position and an operating position in which it actuates said switch, a safety bolt mounted in said boss for movement between a locked position in which it maintains said push-button in its rest position and an operative position in which it permits movement of the push-button to its operating position, return means urging said safety bolt into its locked position, an arm carried by said cover arranged to engage in a slot in said boss and to move said safety bolt into its operative position against the urging of said return means when the cover is moved into its closed position on the bowl, and locking means arranged to automatically lock the safety bolt in its operative position, wherein the safety bolt is pivotably mounted in said boss and has a bifurcated portion which projects partially into the slot of the boss, said bifurcated portion comprising first and second teeth arranged consecutively along a path travelled by the arm of the cover in said slot during the closing movement of the cover, the first tooth forming an operating tab of the bolt against which the arm acts to move the bolt into its operative position, and the second tooth forming a capture lug for the arm, which, when the bolt is in its said operative position, engages said arm on the cover when the cover is moved in a direction to remove the cover from the bowl.

4,362,278

ROLL DISPENSER

Linn L. Hopkinson, 515 Park Ave., Herkimer, N.Y. 13350

Filed Feb. 23, 1981, Ser. No. 236,736
Int. Cl.³ B65H *19/04*
U.S. Cl. 242—55.3 4 Claims



1. A holder and dispenser for a dispensing roll of paper and at least one storage roll of paper comprising:

a generally hollow cabinet having a backside, a front side, a right side and a left side;

a pair of supporting means located on said left side and said right side of said hollow cabinet, said supporting means providing support for a cylindrical core of said dispensing roll of paper;

a cover means pivotally mounted on a top end of said cabinet and moveable between positions in which said top end is normally covered and uncovered for selective insertion of a roll of paper;

a guide means operatively connected to said right side and said left side of said cabinet for guiding a cylindrical core of a dispensing roll of paper to said supporting brackets and for guiding a cylindrical core of at least one storage roll of paper to be in a position over said dispensing roll so as to be gravity fed as a new dispensing roll as soon as a user has exhausted paper rolled on said dispensing roll and has removed the cylindrical core of said dispensing roll from said supporting means; and

a first antipilfering means positioned within said guide means so as to prevent removal of a storage roll or a dispensing roll from said cover means.

4,362,279

WIRE BRAKE FOR A WINDING MACHINE

Wolfgang Rosenkranz, Traunreut, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE80/00059, § 371 Date Jan. 9, 1981, § 102(e) Date Jan. 9, 1981, PCT Pub. No. WO80/02548, PCT Pub. Date Nov. 27, 1980
PCT Filed May 8, 1980, Ser. No. 230,949
Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919145
Int. Cl.³ B65H *59/10*
U.S. Cl. 242—147 R 5 Claims

1. A wire brake for a wire winding machine for electrical cables, comprising;

a. a support frame;

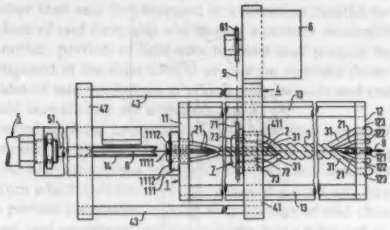
b. a carriage slideably mounted on said support frame;

c. a stretching device coupled to said carriage for moving said carriage relative to said frame;

d. a plurality of brake strands, forming a brake cable, wound about the wire in a single layer and having first ends thereof fixedly clamped to said support frame;

e. a twisting device in said support frame and coupled to the second ends of said plurality of brake strands for selectively winding the second ends of said brake strands about the wire;

f. a plurality of pressure strands, forming a pressure cable, wound about said brake strands in a single layer and having first ends thereof coupled to said support frame; and



g. a control element, rotatably supported by said carriage, coupled to the second ends of said pressure strands, for controllably rotating the second ends of said pressure strands to control the pressure exerted on the brake strands on the wire to control braking thereof.

4,362,280

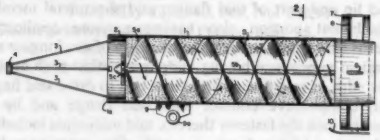
METHOD AND APPARATUS FOR REDUCING DESTRUCTIVE EFFECTS OF TORNADOS

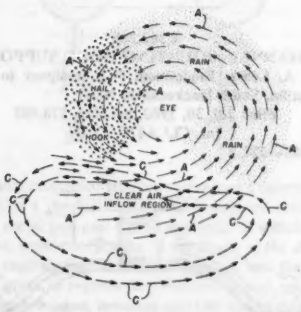
Joseph McCambridge, 12 Watson La., Setauket, N.Y. 11733

Continuation-in-part of Ser. No. 12,513, Feb. 15, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,676

Int. Cl.³ B64C *39/02*; A01G *15/00*; E01H *13/00*

U.S. Cl. 244—1 TD **17 Claims**





1. A method of reducing the destructive effects of violent storms having a rotary motion about a center and having at its periphery at least one clear air inflow region, which comprises propelling through said inflow region in a direction approximately tangential to the storm and opposite to the direction of air flow in said inflow region a plurality of fluid dynamic converters each imparting a rotary motion to a column of air and thereby disturbing the balance of the rotary motion of the storm and reducing its intensity, each of said fluid dynamic converters comprises a generally cylindrical elongate hollow casing wide open at both ends, means for moving said casing lengthwise through the air while restraining it from rotation, and fixed screw means fixed in said casing for imparting a rotary motion to air entering the open front end of said casing and passing through said casing as said casing is moved lengthwise through the air.

4,362,281

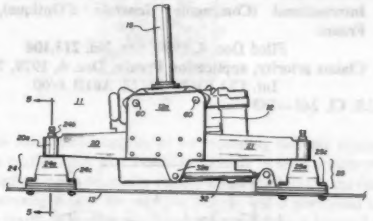
PYLON MOUNTING SYSTEM FOR REDUCING HELICOPTER VIBRATION

Wesley L. Cresap, Fort Worth; Alan W. Myers, Burleson, and Sathy P. Viswanathan, Bedford, all of Tex., assignors to Textron, Inc., Providence, R.I.

Continuation of Ser. No. 16,403, Mar. 1, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,466

Int. Cl.³ B64C *27/00*

U.S. Cl. 244—17.27 **5 Claims**



1. In a helicopter with a fuselage and a pylon including a main rotor, a mount for interconnecting the pylon and fuselage and for attenuating rotor excitation forces, which comprises:

four laterally spaced apart resilient support links arranged in two longitudinally spaced apart pairs interconnecting the pylon and fuselage for relative vertical motion, said links having a predetermined composite spring rate of low stiffness relative to the pylon mass in order to resiliently support said fuselage from said pylon during level flight in an operational region immediately below the point where said pylon and fuselage would resonate so as to attenuate oscillatory forces from the rotor and thereby reduce vibration in said fuselage; and

stop means interconnected between said pylon and fuselage for rigidly limiting vertical deflection therebetween;

said resilient support links being preloaded downward such that said pylon and fuselage are rigidly connected by said stop means up to a predetermined rotor thrust below that necessary to achieve flight.

4,362,282

RAILROAD FROGS

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, Columbus, Ohio

Filed Sep. 21, 1979, Ser. No. 77,608

Int. Cl.³ E01B *7/10*

U.S. Cl. 246—468 **3 Claims**

1. In a railroad frog for trackwork installation which includes a frog point casting with gage lines divergent from the narrow point-of-frog rearwardly to the heel of the frog, the heel of the frog having integrally cast thereto a heel extension

with a hollow interior serving as a spacer for a pair of running rails to be aligned to said gage lines at the heel end of the frog casting, the improvement comprising:

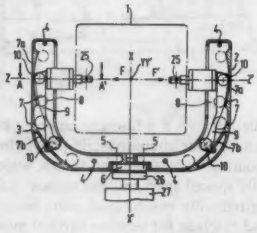
a pair of rail joints cast integral with the frog point and extending rearwardly of the heel on opposite sides of said heel extension and cooperating with the heel extension to afford respective recesses for receiving the related end portions of the running rails; and one of said rail joints being considerably closer to the point-of-frog than the other.

4,362,283

INSTRUMENT STAND

Lucien Bouffechoux, Villemonble, France, assignor to Essilor International (Compagnie Generale d'Optique), Creteil, France

Filed Dec. 4, 1980, Ser. No. 213,106
Claims priority, application France, Dec. 6, 1979, 79 29984
Int. Cl.³ F16M *11/12*; A61B *3/00*
U.S. Cl. 248—183 **7 Claims**



1. An instrument stand equipped with means for fitting an instrument to the stand, and for allowing the instrument to be oriented, in relation to its position when at rest, around one geometrical axis X of the instrument, around a second geometrical axis Y of the same instrument, intersecting the axis X at a fixed point, and around a third geometrical axis Z of the same instrument, perpendicular to the axis Y and also passing through the point of intersection of axes X and Y, said stand comprising:

a head which rotates on a shaft that coincides with the axis X when the instrument is at rest, said head including means for orienting the instrument around axes Y and Z;

orientation means comprising two runners equipped with respective pairs of runner wheels which run along separate tracks located on opposite sides of said head, said tracks presenting circular profiles defined around the axis Y, the treads of the runner wheels being elastically flexible, one of the pairs of wheels on each runner being positioned at a greater distance from the axis Y than the other of the pair of wheels on the same runner, each of said tracks comprising two portions, one portion guiding each of the pair of wheels on each runner, said portions being positioned at different distances from the axis Y and presenting different radii with respect to said axis,

each runner comprising a revolving shaft mounted with friction contact and extending along axis Z towards the point of intersection of all three axes, said revolving shafts being fitted with means for attaching the instrument to the stand; and

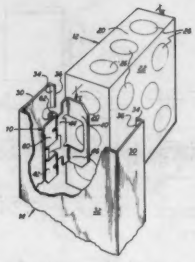
a friction contact assembly for enabling said head to rotate around the axis X.

4,362,284

FASTENER FOR ATTACHING ELECTRICAL BOXES TO STEEL STUDS

Jay J. Bolante, Chicago, Ill., assignor to Appleton Electric Company, Chicago, Ill.

Filed Nov. 3, 1980, Ser. No. 203,468
Int. Cl.³ H02G *3/08*
U.S. Cl. 248—205 R **2 Claims**



1. An improved fastener for attaching an electrical box to a formed sheetmetal member, said member including a flange with a lip turned generally at a right angle thereto and terminating in an edge, the improved fastener attaching only to the flange and lip and comprising:

a piece of formed metal having an electrical box attachment portion and a sheetmetal member attachment portion,

said electrical box attachment portion including means for securely affixing said fastener to said electrical box,

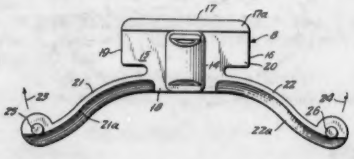
said sheetmetal member attachment portion being spaced from the electrical box attachment portion and having at least one finger extending therefrom designed to fit over said lip and part of said flange, said sheetmetal member attachment portion also having pressure application means extending therefrom in the form of an elongate and resilient appendage having midportions that push against said edge in an outward direction so as to drive said finger into compressive contact with said flange and lip to thereby lock the fastener thereto, said midpoints including at least two longitudinally spaced locking stops extending outwardly therefrom, one of which engages the lip edge for preventing slipping between said appendage and lip.

4,362,285

CHANNEL MOUNTING HOOK SUPPORT

Lawrence A. Lewis, Englewood, N.J., assignor to Clip Strip Corporation, South Hackensack, N.J.

Filed Jul. 30, 1980, Ser. No. 173,457
Int. Cl.³ A47G *25/00*
U.S. Cl. 248—221.3 **13 Claims**



1. A support for a hook, said support being receivable in spaced portions of a C-shaped channel and comprising:

a body having a first side having a pair of ends, a second, opposite side and a pair of lateral sides extending from the ends of the first side to the opposite side, said first side being receivable in a portion of said channel;

a projection on a face of said body in spaced relation to said first side, said projection having at least one aperture therein for receiving a hook, the axis of said aperture extending in a direction substantially perpendicular to a rectilinear line between said ends of said first side and extending at an angle less than 90° with respect to the plane of said face of said body;

a first resilient arm extending from a lateral side of said body other than said first side and in a direction parallel to the plane of said face, said arm having a portion receivable in another portion of said channel and said portion being disposed at the sides of said projection opposite from the sides of said projection at which said first side and one of said lateral sides are disposed; and

a second resilient arm extending in a direction substantially parallel to the plane of said face and from a lateral side of said body other than said first side and other than the side from which said first arm extends, said second arm having a portion receivable in said other portion of said channel and said portion of said second arm being disposed at the sides of said projection opposite from the sides of said projection at which said first side and the other of said lateral sides are disposed.

4,362,286

QUARTER-TURN-LOCKING THERMAL CONNECTOR

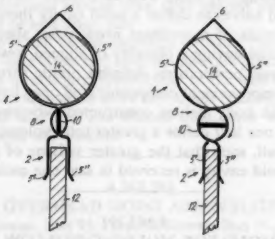
Alain Gentric, 27 Lotissement de Keranroux, Ploubezre, 22300 Lannion, and Jean Le Rouzic, 23, rue de Bourgogne, 22300 Lannion, both of France

Filed May 12, 1980, Ser. No. 148,944

Claims priority, application France, May 15, 1979, 79 12310

Int. Cl.³ A47B *96/06*; E04G *3/00*

U.S. Cl. 248—229 **5 Claims**



1. A thermal connector adapted to connect a calorie dissipating support to a thermal drain, said connector comprising a deformable metal two-part clamp, each part of which is constituted by two webs conforming to the shape of the dissipating support, as regards one of said clamp-parts, and the shape of the thermal drain, as regards the other clamp-part, said connector being also provided, between said two clamp-parts, with a housing for an actuating-key with longitudinal edges, said key having a position of rest at which said longitudinal edges do not exert any force whatever on the walls of said central housing, the webs of the end clamp-parts being then moved apart and said connector being unlocked, and a working position, obtained by causing said key to rotate by a quarter turn with respect to said position of rest, said key having then the function of moving apart the walls of said central housing and to draw the webs of each of said end clamp-parts nearer to each other, said connector being thus locked.

4,362,287

SHOCK ABSORBER ARRANGEMENT FOR MOUNTING DELICATE EQUIPMENT AND SHOCK ABSORBER FOR USE IN THE ARRANGEMENT

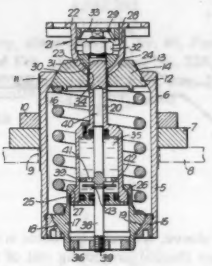
Oddvar Grongstad, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway

Filed Feb. 11, 1980, Ser. No. 120,351

Claims priority, application Norway, Feb. 16, 1979, 790531

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—563 **4 Claims**



1. Shock absorber arrangement for mounting delicate equipment on a carrier such as a vessel or vehicle in such a manner that the equipment is normally rigidly connected to the carrier in a predetermined position relative thereto, but is permitted to yield as a result of shocks involving an acceleration beyond a certain limit, whereupon it is forced back into said predetermined position, characterized in that the arrangement comprises three separate, self-contained, identical shock absorbers which all act in both directions along a vertical axis and carry the equipment at a level different from that of the centre of gravity of the equipment, whereby horizontal shocks result in a tilting movement and thus a vertical load in opposite directions on the shock absorbers, comprising a piston-like element having an outer conical surface which by means of a biased spring is forced into self-centering engagement with a corresponding inner conical surface on a second element, characterized in that the opposite end of the spring engages an abutment element having an engagement surface which by the spring is forced towards a corresponding engagement surface on said second element, which forms a sleeve-like housing in which the spring is arranged, and is adapted to be adjustably mounted on the carrier, and that a shaft-like element which extends axially through the housing and displaceably through the piston element and the abutment element, respectively, at both ends of the housing and which is adapted to be connected to the equipment to be mounted, engages axially outwardly directed engagement surface on the piston element and the abutment element, whereby the relative axial movement between the shaft and the housing can take place in both directions by movement of either the abutment element or the piston element inwardly in the housing with concomitant compression of the spring between these elements.

4,362,288

SHOCK-ABSORBING CABLE ANCHOR FOR MOBILE EQUIPMENT

Herman Allen, Rte. 3, Box A-16, Orgas, W. Va. 25148

Filed Jun. 27, 1980, Ser. No. 163,578

Int. Cl.³ F16M *13/00*

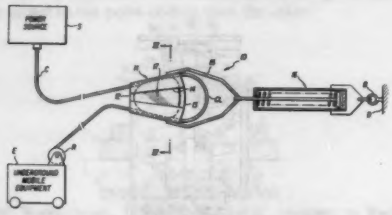
U.S. Cl. 248—613 **1 Claim**

1. A cable anchor or support for supporting an electrical cable connected with mobile equipment, comprising:

a sleeve having first and second open ends and a slot extending longitudinally completely across one side thereof, said sleeve being tapered from the first end to the second end and being larger in width at the second end than the first

end, said sleeve comprising a sheet metal member bent to define the open ended slotted structure;

a generally triangularly shaped wedge formed of a solid, metallic body shaped complementally to the sleeve and being insertable lengthwise into the sleeve and entirely received therein through the second open end thereof into a position between opposite flights of a cable loop inserted into the sleeve through the slot thereof for wedging opposite flights of the cable against opposite inner edge portions of the sleeve, whereby the cable is supported with a bight portion thereof projecting out of the second open end of the sleeve and the ends of the cable projecting out of the first open end of the sleeve, said wedge having a peripheral groove for contact with the cable;



spring means connected between the second end of the sleeve and a fixed anchor point; and

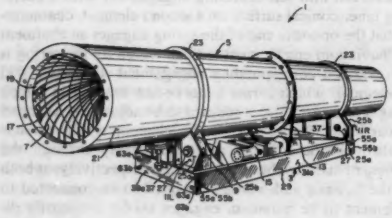
a stirrup fixed to the sleeve at the second end thereof, said spring means connected with the stirrup.

4,362,289

SUPPORT BASE FOR A MACHINE OR THE LIKE

Albert J. Meade, St. Louis County, Mo., assignor to Ancel Products, Inc., St. Louis, Mo.

Filed Apr. 12, 1979, Ser. No. 29,273
Int. Cl.³ B22D *29/00*
U.S. Cl. 248—656 **4 Claims**



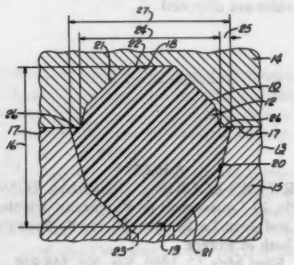
1. A support for a machine or the like comprising a frame having first and second axes thereon and at least two supports at spaced intervals on said frame, each of said supports having at least one reference point thereon, said support base further having means for adjustably securing said supports to said frame with said reference point of each of said supports being in a desired position, said frame and said supports interfitting with one another, said securing means comprising a first set of one or more fasteners extending in a direction parallel to said first axis and interconnecting said frame and said support and a second set of one or more fasteners extending in the direction of said second axis and interconnecting said frame and said support, said first and second sets of fasteners each being independently adjustable so as to selectively move said support relative to said frame along said first and second axes and being securingly operable so as to lock said support to said frame in its desired adjusted position with said reference points in their desired positions, said frame being a weldment having a longitudinal side member at each side thereof, said longitudinal side members being parallel to said first axis of said frame, said supports being generally perpendicular to said side members and being generally parallel to said second axis, each of said longitudinal side members having a socket therein for receiving a portion of each of said supports, said socket at least partially receiving a portion of its respective support, said first set of fasteners extending through a portion of said socket adjacent the sides of the support in a direction generally parallel to said first axis and being engageable with the sides of the support, said second set of fasteners extending through said longitudinal side member in a direction generally parallel to said second axis and being engageable with said support.

4,362,290

MOLD FOR PLASTIC NEEDLEPOINT SHEET

Michael K. Marx, Pittsburgh, and Louis P. Musante, Fairview, both of Pa., assignors to Westminster Marketing, Inc., Pittsburgh, Pa.

Filed Jul. 17, 1981, Ser. No. 283,908
Int. Cl.³ B27C *1/00*; B29F *1/00*
U.S. Cl. 249—60 **9 Claims**



1. In a mold having engageable top and bottom mold body halves with open uniform mold channels formed in each half in a lattice configuration wherein the channel lattices of the mold halves cooperatively mate with each other upon engagement of said mold halves to define a mold cavity therebetween for molding therein of a resultant needlepoint sheet of flexible plastic material having a plurality of aligned rows of perforations with said perforations defining plastic threads therebetween, the improvement comprising said open lattice channels in said mold body halves constructed whereby the lattice channels in one half define a greater total volume than that of the other half, such that the greater volume of plastic to be molded in said cavity is received in said one mold half.

4,362,291

METAL MOLD FOR MOLDING HOLLOW ARTICLE HAVING INWARDLY TAPERED SIDE WALL

Yasukiyo Fuke, and Ryoichi Watanabe, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,607
Claims priority, application Japan, Feb. 26, 1980, 55-23576
Int. Cl.³ B29C *1/06, 1/16*
U.S. Cl. 249—144 **1 Claim**

1. A metal mold for molding a hollow product having a narrow opening, a wide bottom plate and a side wall between said narrow opening and said bottom plate, said metal mold comprising:

a stationary mold plate secured to a stationary mounting plate of an injection molding machine and provided with a resin inlet runner for molding said bottom plate;

a movable cavity plate which is brought into contact with said stationary mold plate when said metal mold is closed and separated therefrom when said metal mold is opened;

means for moving said cavity plate in an axial direction of

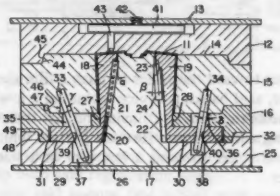
said mold over a stroke sufficient to remove a molded product from said stationary mold plate;

first and second pins secured to said movable cavity plate and oppositely inclined with respect to an axis of said mold;

a core to be located inside of said molded product and secured to a movable die plate of said injection molding machine, said core having a plurality of axially extending polygonal surfaces surrounding the same;

first slide cores which when said mold is closed engage with said polygonal surface of said core to form a portion of a side wall of said molded product, whereas when said mold is opened, said first slide cores are guided by said first pin to move together with said core toward the center of said mold over a stroke sufficient to remove said molded product in the axial direction and also to move in the radial direction;

first dove tail means disposed between one end of said first slide cores and said movable die plate and extending in a direction perpendicular to the axis of said core;



first and second cotters respectively having inclined surfaces parallel to said inclined polygonal surfaces;

second slide cores disposed adjacent said polygonal surfaces of said core, said second slide cores molding another portion of said side wall of said molded product together with said first slide cores when said mold is closed, said second and first slide cores being alternately arranged about said core, said first cotters being secured to said second slide cores, the inclined surfaces of said second cotters being caused to engage the inclined surfaces of said first cotters by said second pin when said mold is closed so as to urge said second slide core against said polygonal surfaces of said core; and

second dove tail means disposed between one end of said second slide cores and said movable die plate and extending in a direction perpendicular to the axis of said core, said first and second dove tail means limiting axial movements of said first and second slide cores while guiding their radial movements.

4,362,292

OVERHEAD HOIST ASSEMBLIES

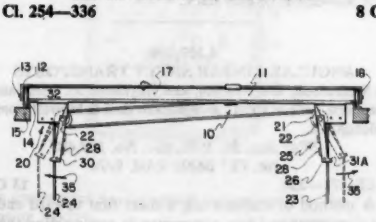
Donald J. Rowan, Box 91; Larry J. Rowan, Box 54, and Kenneth L. Rowan, Box 82, all of Elkhorn, Manitoba, Canada

Filed Mar. 12, 1981, Ser. No. 242,913

Claims priority, application Canada, Mar. 14, 1980, 347666

Int. Cl.³ B66D *1/54*; B66C *15/00*

U.S. Cl. 254—336 **8 Claims**



1. In an overhead hoist assembly which includes a pair of spaced apart cables extending downwardly therefrom and being operatively connected to said hoist assembly; the improvement comprising a cable guiding arm assembly for each cable, means pivotally to support said arm assembly from said hoist assembly, means on said arm assembly guiding said cable, and spring means normally urging said arm assemblies outwardly away from one another thereby displacing said cables from the vertical, tension on said cables above a predetermined amount, overcoming said spring means and allowing said cables to straighten and run vertically.

4,362,293

CUPOLA

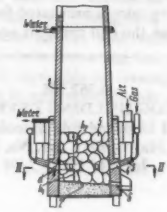
Anatoly A. Cherny, ulitsa Slavy, 7, kv. 40, Penza, U.S.S.R.

Filed Feb. 18, 1981, Ser. No. 235,393

Claims priority, application U.S.S.R., Aug. 23, 1979, 2810462

Int. Cl.³ F27D *1/08*

U.S. Cl. 266—219 **2 Claims**



1. A cupola comprising:

a shaft;

a plurality of burners, each burner having an outlet, said outlets being situated around the periphery of the bottom part of said shaft;

a plurality of nozzle ducts, each of which ducts is connected to the outlet of a respective burner, each duct having an outlet situated about a plane of a cross-section of said shaft;

a hearth positioned at the bottom of said shaft; and

a refractory bed located above said hearth;

wherein the total outlet cross-sectional area of the nozzle ducts (Σf) is equal to from 0.02 to 0.18 of the cross-sectional area of said shaft (F) in said plane of location of the nozzle ducts, and the outlet cross-sectional area (f) of each nozzle duct is chosen such that the distances (h_1, h_2) from the nozzle duct lower edge to the cupola hearth and from the nozzle duct upper edge to the top level of the refractory bed are respectively (0.8 to 7.0)d and (2 to 16)d where "d" is the diameter of a circle whose area is equal to said outlet cross-sectional area (F) of the nozzle duct.

4,362,294

SPRING SEAT FOR A COIL SPRING

Hermann Schobbe, Fellbach; Wolfhard König, Stuttgart, and Werner Möhrmann, Fellbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,705

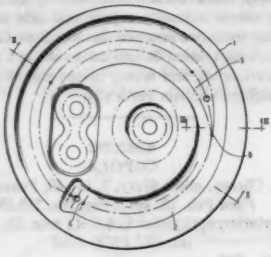
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938101

Int. Cl.³ F16F *1/12*

U.S. Cl. 267—170 **5 Claims**

1. A spring seat for accommodating a freely terminating end portion of a spring wire of a coil spring of an axle suspension arrangement of a motor vehicle, the spring seat including a supporting groove, characterized in that the supporting groove only extends over a circumferential range of about 75°–120°, and in that the supporting groove has an approximately V-shaped cross section with side flanks of the support-

ing groove being disposed such that the terminating end portion of the spring wire only contacts the side flanks of the



V-shaped supporting groove whereby the terminating end portion of the spring wire is prevented from participating in a rolling motion when the coil spring is under a load.

4,362,295

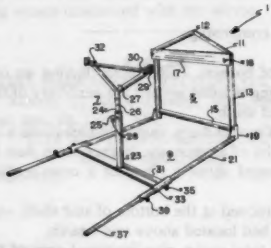
LOG HOLDING DEVICE

Henry E. Ford, 381 Highland Rd., Macedonia, Ohio 44056

Filed May 4, 1981, Ser. No. 260,082

Int. Cl.³ B23Q *1/04*

U.S. Cl. 269—69 **4 Claims**



1. A log securing device, comprising:

a base of adjustable length, said base comprising a pair of longitudinally extending parallel members;

a stand, adjustably movable upon and extending normal to said base, said stand comprising a V-shaped yoke at a top end thereof and telescoping sections for selective vertical extension; and

a bow received at an end of said base in alignment with said stand, said bow comprising an inverted V-shaped brace at a top end thereof.

4,362,296

X-RAY FILM DISPENSING APPARATUS

Gunter Schmidt, Malibu, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 925,554, Jul. 17, 1978, Pat. No. 4,260,896, which is a continuation-in-part of Ser. No. 805,815, Jun. 13, 1977, abandoned. This application Oct. 24, 1980, Ser. No. 200,197

Int. Cl.³ B65H *3/52*

U.S. Cl. 271—121 **4 Claims**

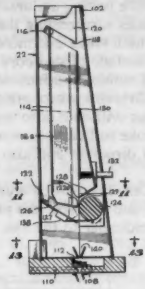
1. Apparatus for receiving a stack of film sheets and dispensing one film sheet at a time, comprising:

a housing having a region for holding a stack of film sheets wherein each film sheet extends in a largely vertical plane;

a roller at the lower end of said housing;

means spaced slightly from said roller to normally allow only one film sheet at a time to pass by said roller, said means including a support plate; and

a backing device disposed in said housing with a lower end thereof on a side of said region opposite said roller, said backing device being urged to move so its lower end



moves toward the roller to push a film sheet against said roller, said backing device including a low friction block at the bottom thereof having fingers thereon, the fingers having a low friction forward portion which moves close to said roller to press a last film of a stack against said roller.

4,362,297

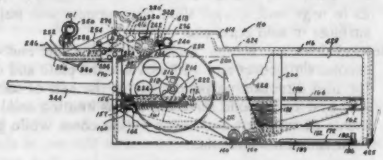
LARGE CAPACITY COMBINATION MAGAZINE AND SHEET FEEDER FOR COPYING MACHINES

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Continuation of Ser. No. 898,139, Apr. 20, 1978, abandoned. This application Jun. 3, 1981, Ser. No. 269,774

Int. Cl.³ B65H *1/18*

U.S. Cl. 271—152 **14 Claims**



1. In a magazine having a delivery opening through which sheets of a stack of sheets are successively removed and means for advancing said stack toward said delivery opening, the improvement comprising an inertial damper and means including a one-way clutch for coupling said inertial damper to said advancing means to damp said advancing means to limit the rate of movement of said stack.

4,362,298

ANGULAR-LINEAR SHEET TRANSPORTS

Rafn Stefansson, San Marino, and Raymond M. McManaman, Glendora, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 26, 1981, Ser. No. 228,487

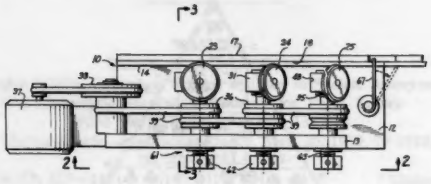
Int. Cl.³ B65H *9/04, 9/16*

U.S. Cl. 271—236 **13 Claims**

1. A method of transporting a sheet first toward and then along a registration edge, comprising in combination the steps of:

providing a support of said sheet having a sheet support surface adjacent said registration edge;

providing a first drive wheel at right angles to said sheet support surface and rotatable about an angularly movable first axis extending parallel to said sheet support surface;
providing a second drive wheel rotatable about a second axis intersecting said first axis at an angle;
providing said first wheel laterally with a circular driven part extending about said first axis in a tangential plane of said second wheel;
positioning said first wheel at an angle to said registration edge and rotating said first wheel with said second wheel through said driven part about said first axis and bringing said sheet into peripheral engagement with said first drive wheel to transport said sheet on said sheet support surface to said registration edge;



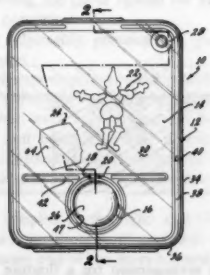
laterally moving said circular driven part with said first wheel relative to said second wheel equidistantly about said second axis to swing said first wheel toward parallel relationship with said registration edge;
further rotating said swung first wheel with said second wheel through said driven part about said first axis to transport said sheet along said registration edge;
temporarily retaining said sheet at said first drive wheel against transportation by said rotating first drive wheel and in alignment with said registration edge; and
subsequently releasing said retained sheet for further advancement along the registration edge by said rotating first drive wheel.

4,362,299

AMUSEMENT DEVICE WITH FLUID MOVABLE ARTICULATED MEMBER

Nobuhiro Suzuki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,421
Claims priority, application Japan, Mar. 31, 1980, 55-42657[U]; Nov. 6, 1980, 55-158740[U]
Int. Cl.³ A63F *7/00, 9/06*
U.S. Cl. 273—1 L **6 Claims**



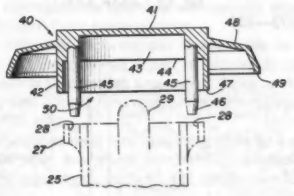
1. An amusement device which comprises:
a housing having;
a fluid member divided into a first section and a second section;
said fluid chamber capable of holding a body of fluid;
at least one fluid passageway connecting said first and said second sections of said chamber;
said second section including means capable of moving a portion of a body of fluid through said fluid passageway alternately between said first and said second sections of said chamber;
said first section including a generally flat face plate, a generally flat rear plate and a wall means, said wall means attaching to both said face plate and said rear plate maintaining said face plate and said rear plate spaced a distance apart from each other in a parallel planar relationship with one another;
at least one generally planar member having a front side and a rear side, said member including a plurality of parts articulately joined together such that any one of said parts is movable with respect to at least one other of said parts, said member movably located in said first section with its front side located towards said face plate and freely movable throughout said first section in response to fluid movement through said passageway from said second section to said first section, said member sized with respect to the distance between said face plate and said rear plate so as to be incapable of rotating within said first section to locate its rear side towards said face plate.

4,362,300

CAP FOR PINBALL GAME REBOUND DEVICE

Max Wiczer, Skokie, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Nov. 17, 1980, Ser. No. 207,681
Int. Cl.³ A63F *7/10*
U.S. Cl. 273—119 A **7 Claims**



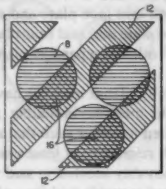
1. In an automatic rebound device mounted on the playfield board of a pinball game and having a pedestal portion projecting above the playfield board and carrying an electric lamp therein, the improvement comprising an opening formed in the top of the pedestal portion, a cap having a cylindrical side wall shaped and dimensioned to permit overlapping with the pedestal portion and a top wall closing the upper end of said side wall, said cap including a flange extending laterally outwardly and downwardly from said side wall around the perimeter thereof and terminating well above the lower end of said side wall, an elongated mounting pin connected to said top wall of said cap and extending therefrom in the same direction as and well beyond the lower end of said side wall, said pin being adapted for press-fitting into said opening to a selected depth for mounting said cap in an assembled position covering the pedestal portion and the electric lamp therein, said cylindrical side wall of said cap being dimensioned for cooperation with the pedestal portion for substantially concealing the electric lamp and to provide a chamber for the electric lamp of sufficient volume to prevent overheating of the cap.

4,362,301

MULTIPLE IMAGE VISUAL PUZZLE AND METHOD

Edward W. Duveyoung, 2052 Wilkins Ave., Apt. #19, Napa, Calif. 94558

Filed Dec. 17, 1980, Ser. No. 217,360
Int. Cl.³ A63F 9/06
U.S. Cl. 273—157 A 12 Claims



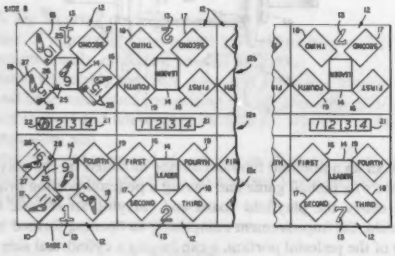
1. A visual puzzle comprising:
a plurality of partial image sheets, said sheets of a transparent material and having partial image portions of a first color and background portions of a second color formed thereon, said partial image portions and background portions formed on both sides of at least one of said partial image sheets, said image and background areas forming a first image or a second image when properly arranged in corresponding overlying relationships, said image portions and background portions formed on said partial image sheets by selectively masking portions of said first image with either said second image or other partial image sheets or both so that said image portions and said background portions are codified onto said partial image sheets.

4,362,302

BOARD GAME UTILIZING PLAYING CARDS

Anthony R. Gardner, 436 N. Highland Ave. NE., Atlanta, Ga. 30307

Filed Aug. 14, 1980, Ser. No. 178,138
Int. Cl.³ A63F 3/00
U.S. Cl. 273—236 2 Claims



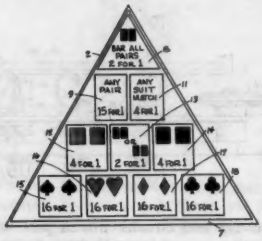
1. A board game comprising:
a game board including indicia thereon defining a plurality of columns adjacent to one another, each of said columns including a pair of player posts positioned at opposite ends of said column; each of said player posts defining a leader location and a plurality of supporting locations arrayed adjacent to said leader location and marked (1) in sequential association with said leader location and (2) in correspondence with one of the supporting locations of the opposite player post; said indicia further defining a sequence of play set of indicia defining areas marked to correspond to corresponding opposite pairs of said supporting locations;
a plurality of cards each bearing indicia corresponding to a support location to which said card must be assigned when dealt to one of said player posts and a value symbol for comparing said cards to one another; and
a sequence of play marker movable within said sequence of play set of indicia to indicate which supporting location is to be associated with said leader locations of said player posts.

4,362,303

TABLE GAME EMPLOYING TWO SETS OF CARDS

Philip T. Pell, P.O. Box 125, Pilot Mountain, N.C. 27041

Filed Sep. 15, 1980, Ser. No. 187,571
Int. Cl.³ A63F 3/00
U.S. Cl. 273—274 4 Claims



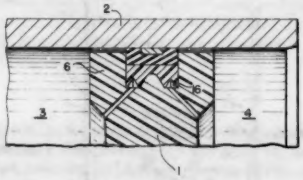
1. A game adapted to be run by an operator and which may involve one or more players, and comprising
two separate sets of conventional playing cards, with each playing card having one of thirteen rankings, one of four suits, and one of two colors, and
a table having a plurality of defined player areas, with each player area having a plurality of distinct regions, with the regions each including a visual representation of a possible relationship between the rankings, or suits, or colors, or a combination thereof, of a dealt playing card from each set, and with the possible relationship represented at each region being different from that represented at the other regions.

4,362,304

PACKING ARRANGEMENT FOR A FLOATING PISTON

Walter Hünger, Otto-Nagler-Str. 13, D-8700 Wuerzburg, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,279
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947895
Int. Cl.³ F16J 15/48
U.S. Cl. 277—27 5 Claims



1. A packing arrangement for a floating piston dividing a cylinder into first and second chambers comprising:
a circumferential groove formed in the sliding surface of said floating piston;
a circumferential elevation dividing the bottom of said groove into first and second spaces situated on either side of said elevation;

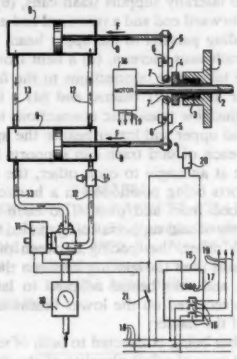
backing material placed in said groove;
a sealing ring radially situated upon said backing material;
first and second extensions on said backing material projecting into said first and second spaces, respectively;
each extension having first and second lips forming an annular space between the bottom of said groove and the internal surface of said backing material;
said first lip of each extension abutting a lateral wall of said groove and said second lip of each extension abutting a lateral surface of said elevation;
a first pressure channel connecting the first chamber with said annular space formed by said first extension; and
a second pressure channel connecting the second chamber with said annular space formed by said second extension.

4,362,305

PUMP SEALING DEVICE

Andre Salaün, Colombes, France, assignor to Societe Anonyme dite: Compagnie Generale d'Automatisme, Paris, France

Filed Mar. 19, 1980, Ser. No. 131,886
Claims priority, application France, Mar. 26, 1979, 79 07521
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—113 **7 Claims**



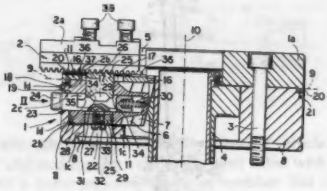
1. A pump shaft sealing device for a pump having a body, a drive shaft extending from the body, and a motor operatively connected to the drive shaft, the device including a stuffing box surrounding the drive shaft where it passes through the pump body, packing disposed in the stuffing box, a packing gland for compressing the packing against the shaft, and means for adjustably pressing the gland against the packing, wherein the improvement comprises:
said means for adjustably pressing the gland against the packing includes
at least two levers disposed radially with respect to the axis of the drive shaft in equiangularly spaced relation to each other, each lever having an inner end and an outer end and being pivotally mounted for rotation about an axis located intermediate the inner and outer ends and tangent to a circle concentric with the drive shaft;
drive means coupled to the outer end of each lever for rotating the lever about its pivot axis so as to selectively move the inner end of the lever toward and away from the packing gland; and
means for automatically actuating each drive means to cause the inner end of the respective lever to exert a predetermined axial force on the packing gland as soon as the pump motor stops and to release said force before the pump motor starts.

4,362,306

SPLIT-JAW LATHE CHUCK

Günter H. Röhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,654
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930721
Int. Cl.³ B23B *31/16*
U.S. Cl. 279—121 **10 Claims**



1. A chuck comprising:
a chuck body rotatable about a chuck axis and subdivided along a plane substantially perpendicular to said chuck axis into a front chuck part and a rear chuck part connected integrally together, said chuck body being formed in said rear chuck part with a plurality of angularly spaced and radially extending rear T-section guide grooves opening axially forwardly at said plane and each having a pair of radially extending sides each in turn formed with a step extending parallel to and backwardly offset from said plane, said front chuck part being formed in axial alignment with said rear guide grooves with respective angularly spaced and radially extending front guide grooves opening axially forwardly, said front chuck part having a backwardly facing planar face lying on said plane and forwardly closing said rear guide grooves and respective webs forming the bases of and backwardly closing said front guide grooves, said webs forming respective parts of said backwardly facing face and each being formed with a radially throughgoing aperture substantially smaller than the respective front guide groove:
respective rear jaw parts radially displaceable in said rear grooves and each having a pair of oppositely projecting ridges each in turn having a rear face riding on the respective step and a front face riding on said back face of said front chuck part;
means including at least one operating element engageable with said rear jaw parts for radially displacing same jointly in said chuck body in the respective rear guide grooves;
respective front jaw parts projecting forwardly and axially from said chuck body and radially displaceable therein in said front guide grooves and
means including respective coupling members engageable through said apertures between said rear jaw parts and the respective front jaw parts and each displaceable between a coupling position engaging both of the respective jaw parts for coupling same together for joint radial displacement and a decoupling position for relative radial displacement of the respective jaw parts.

4,362,307

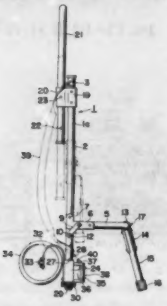
SHOULDER-CARRIABLE CART

Koma Nakatani, Tokyo, Japan, assignor to Nihon Velbon Seiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,184
Claims priority, application Japan, Nov. 9, 1979, 54-156390
Int. Cl.³ B62B *1/04*; A47D *13/02*
U.S. Cl. 280—30 **10 Claims**

1. A shoulder-carriable cart comprising: a frame including a pair of pipes; a pair of wheel supports fitted over the lower

portions of the frame in such a manner that they can be rotated or held immovable; wheels, each mounted on and projecting from one side of a wheel support, pins projecting from the frame; grooves formed in the wheel supports to receive the



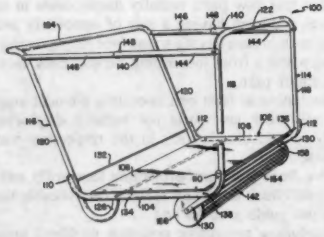
pins to selectively hold the wheels immovable on the front side of the frame, the back side of the frame, and between the pipes of the frame, and a buckle through which a waist belt is inserted attached to each wheel support on the side thereof opposite the side on which an associated wheel is mounted.

4,362,308

COMBINATION PORTABLE CHAIR AND CONTAINER

James S. Hicks, P.O. Box 703, Sussex, N.J. 07461, and Pasquale Massaro, 65 Hunter Rd., Lincoln Park, N.J. 07035

Filed Jan. 8, 1981, Ser. No. 223,405
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—30 **18 Claims**



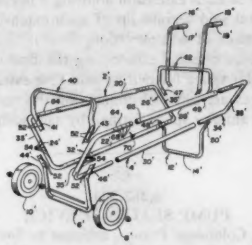
1. A collapsible, multi-purpose assembly comprising a base, a pair of sidewall members each having first and second ends, said first ends of said sidewall members being pivotally connected to opposite sides of said base, a pair of securing means for securing said sidewall members in a first position and for permitting said sidewall members to be arranged into a second and third position, said securing means being connected to the second ends of said sidewall members between common sides thereof, said assembly forming a container when arranged in said first position, a chair when arranged in said second position and a collapsed assembly when arranged in said third position, and rotating means located adjacent one side of said base for moving said assembly over a desired surface, said rotating means comprising a plurality of longitudinally extending ribs arranged radially about the longitudinal axis of said rotating means.

4,362,309

TRASH CAN HAULER

James F. Stamper, Nashville, Ind., assignor to Seymour Division of Lear Siegler, Inc., Seymour, Ind.

Filed Jan. 7, 1981, Ser. No. 223,178
Int. Cl.³ B62B *3/02*
U.S. Cl. 280—47.19 **6 Claims**



1. A trash can hauler comprising:

a pair of trash can supports, each comprising (a) an upper beam having a forward end and a rearward end and adapted to laterally support trash cans, (b) a lower beam having a forward end and a rearward end and spaced from and extending parallel to the upper beam and adapted to support trash cans thereon, (c) a bent front beam having adjustable telescopic connections to the forward ends of said upper and lower beams, and (d) a bent rear beam having adjustable telescopic connections to the rearward ends of said upper and lower beams; the upper and lower beams of each of said trash can supports being in planes which are at an angle to each other, the lower beam of said supports being positioned in a horizontal plane and being spaced from and parallel to each other, and the upper beams of said supports being spaced from and parallel to each other, the spacing between the upper beams being greater than the spacing between the lower beams, said front and rear beams adapted to laterally support trash cans received on the lower beams at the front and the rear of the hauler;

a front member being connected to both of said front beams at selected ones of a first plurality of attachment locations and having a lower beam member extending below the horizontal plane with at least one ground-engageable, rotatable wheel connected thereto wherein said wheels are disposed in front of and below said front member to prevent interference with a trash can supported on said lower beams adjacent the front member; and

a rear member having (a) a lower ground-engageable portion and (b) a pair of spaced, upper portions, each of said spaced upper portions being connected to the corresponding rear beam of said trash can supports at selected ones of a second plurality of attachment locations.

4,362,310

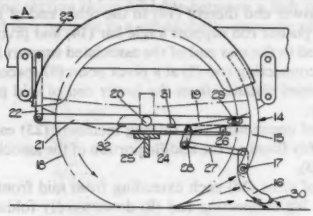
SPRAY-INHIBITING MEANS FOR USE ON A ROAD VEHICLE

Maurice Goodall, Burton-upon-Trent, England, assignor to Maurice Goodall (Holdings) Limited, Staffordshire, England

Filed Dec. 20, 1979, Ser. No. 105,514
Claims priority, application United Kingdom, Dec. 27, 1978, 50004/78; Aug. 4, 1979, 7927268; Aug. 11, 1979, 7928041
Int. Cl.³ B62B *9/16*
U.S. Cl. 280—157 **9 Claims**

1. Spray-inhibiting means for a road vehicle having a vertically movable load carrying part supported by suspension means including wheel means, said spray-inhibiting means comprising a screen which is adapted in use to intercept water thrown rearwardly from a vehicle tyre, support means for mounting said screen on the vehicle in a manner so that said

screen and said load carrying part can move vertically relative to each other, said support means including linkage means connecting said screen with both said suspension means and said load carrying part said screen being connected pivotally through said linkage means to said suspension means and to



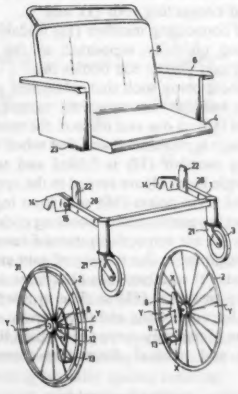
said load carrying part, said linkage means being responsive to vertical movement of said load carrying part to correspondingly vertically move said screen so as to maintain said screen at a relatively fixed distance from the road surface during said vertical movement of said load carrying part.

4,362,311

DISMOUNTABLE WHEEL-CHAIR

Per G. Bergman, Hyggevägen 21, Spanga, Sweden (S-163 54)

Filed Nov. 15, 1979, Ser. No. 94,746
Claims priority, application Sweden, Nov. 16, 1978, 7811853
Int. Cl.³ A61G *5/02*
U.S. Cl. 280—242 WC **18 Claims**



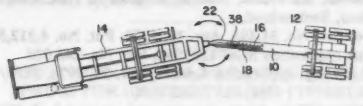
1. A dismountable wheel-chair comprising a base structure, rotatably mounted drive wheels and caster wheels, and a seat member with a back rest, means for detachably connecting said drive wheels, caster wheels and seat member to said base member, and means for detachably connecting said arm rests to said seat member, said means for detachably connecting said drive wheels, seat member and arm rests comprising separate self-locking wedge joints having substantially vertical wedge axes.

4,362,312

REACH COMPENSATOR FOR LOGGING TRUCK AND TRAILER

Frank Deiaco, and Allan J. McInnes, both of 2355 Marlborough Dr., Nanaimo, B.C., Canada (V9S 3J3)

Filed May 8, 1978, Ser. No. 903,835
Int. Cl.³ B62D *53/00*
U.S. Cl. 280—404 **3 Claims**



1. In a trailer adapted to be towed by a towing vehicle where said trailer and said towing vehicle are each fitted with means to secure to a common semi-rigid load member that may be fastened to both the trailer and the towing vehicle, a reachpole including a tubular member having a forward end, an elongated cylindrical inner sleeve telescopically received within and movable longitudinally of said tubular end; spring means urging said sleeve into said reachpole; said inner sleeve having a front end extending out of said tubular member and having means on said front end for releasably attaching same to said towing vehicle, in which the said inner sleeve is normally free to rotate with respect to the tubular member, further including

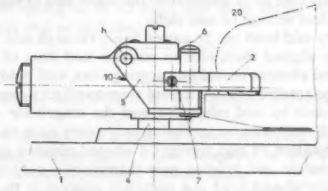
a longitudinal bar guide removably secured to the outer surface of said inner sleeve, by fastener means, to prevent rotation thereof in said tubular member, when the trailer and towing vehicle are being loaded.

4,362,313

TOE ABUTMENT MEMBER FOR A SKI BINDING

Louis Andrieu, Guerigny; Jean Bernard; Jean Beyl, both of Nevers; Daniel LeFaou, Varennes Vauzelles; Henri Peyre, and Jacky Veniat, both of Nevers, all of France, assignors to Sté Look, Nievre, France

Filed Oct. 27, 1980, Ser. No. 200,978
Claims priority, application France, Nov. 13, 1979, 79 27894
Int. Cl.³ A63C *9/22*
U.S. Cl. 280—628 **6 Claims**



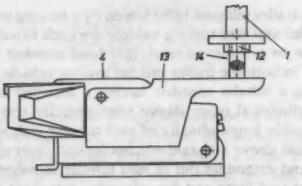
1. A toe abutment member for a ski binding, comprising:

a jaw unit constituted by two lateral arms adapted to cooperate with the front portion of the ski boot in order to maintain said boot in the axis of the ski, said jaw unit being carried by a body and said body being pivotally mounted on a pivot which is intended to be attached vertically to said ski;

a resilient device housed within the body for locking the arms in the boot-retaining position with a predetermined stiffness of release, wherein said toe abutment member comprises a feeler member adapted to be in contact with the front portion of the ski boot and to cooperate with the resilient device so as to reduce the stiffness of release of said device at the time of a forward-fall position of the skier and/or of an axial thrust exerted by the ski boot, and wherein the jaw unit is mounted on the body for pivotal displacement about a transverse horizontal axis and the

feeler member is also mounted so as to be capable of rotation about a transverse horizontal axis and consequently of producing action on the resilient device by reducing its stiffness of release in the further event of a backward-fall position of the skier.

4,362,314
SAFETY-STRAPLIKE CONNECTING MEMBER
Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland
Division of Ser. No. 31,493, Apr. 19, 1979, Pat. No. 4,312,519.
This application Mar. 12, 1981, Ser. No. 243,029
Claims priority, application Austria, Apr. 21, 1978, 2897/78
Int. Cl.³ A63C 9/00
U.S. Cl. 280—637 **2 Claims**



1. A retaining device adapted for use with a ski having a ski binding mounted thereon releasably securing a ski shoe to the ski, said device comprising:

a resilient T-shaped element having a stem of substantially elliptic cross section and a head which extends substantially parallel to the major axis of said elliptical cross section of said stem, the end of said stem remote from said head being fixedly mounted to a surface of said ski binding;

a safety strap, one end of said safety strap being releasably securable to the leg of a skier; and

a platelike holding part securely attached to the end of said safety strap remote from said one end and having two intersecting slots therein, one said slot being longer than the other said slot and having a shape substantially the same as the shape of said head and a size slightly greater than the size of said head, and the other said slot being slightly shorter in length than the major axis of said elliptical cross section of said stem;

whereby said head can be passed easily through said one slot when aligned therewith to position said stem of said T-shaped element in said intersecting slots, said holding part can be rotated relative to said stem to effect a gripping of said stem by said other slot, and the magnitude of force which must then be applied to said safety strap to effect a deformation of said resilient T-shaped element sufficient to separate said holding part therefrom is controlled by the size of said head and said stem relative to the size of said other slot and by the degree of elasticity of said T-shaped element.

4,362,315
BABY CARRIAGE
Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan
Filed Jan. 27, 1981, Ser. No. 229,020
Claims priority, application Japan, Jan. 30, 1980, 55-10424
Int. Cl.³ B62B 7/06
U.S. Cl. 280—650 **9 Claims**

1. A baby carriage comprising;

a pair of support leg pusher rod connecting rods (1) disposed to extend longitudinally,

a pair of front legs (3) each pivotally connected (2) to the relatively forward portion of the associated support leg pusher rod connecting rod (1),

a pair of rear legs (4) each pivotally connected (19) to the intermediate portion of the associated front leg (3) and rearwardly downwardly extending therefrom,

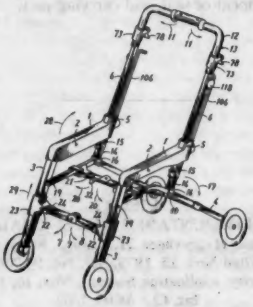
a pair of pusher rod support angle bars (14) each pivotally connected at one end thereof (as at 16) to the intermediate portion of the associated rear leg (3) and adapted to be vertically turnable,

a pair of pusher rod bodies (6) each pivotally connected at the lower end thereof (15) to the other end of the associated pusher rod support angle bar (14) and pivotally connected to the rear end of the associated support leg pusher rod connecting rod (1) at a pivot point (5) spaced a predetermined distance from the lower end of said pusher rod body,

a pair of connecting rod turning members (23) each axially slidably fitted on the middle portion of the associated front leg (3),

a pair of arms (26) each extending from said front legs (3),

a front leg connecting rod (8) downwardly foldable at the middle thereof, pivotally connected at the opposite ends thereof (22) to said connecting rod turning members (23) and pivotally connected at positions spaced a predetermined distance from each end thereof to said arms (26),



bar links (25) connected between said connecting rod turning members (23) and the front ends of said support leg pusher rod connecting rods (1), and

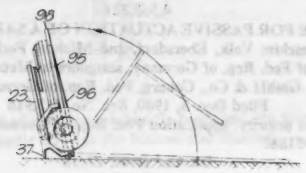
a pusher rod connecting member (12) foldable at the middle thereof and pivotally supported at the opposite ends thereof by said pusher rod bodies (6),

the arrangement being such that when said pusher rod support angle bars (14) are upwardly turned each around a pivot point (16) on one end thereof, the opened state of the baby carriage is established and that when said pusher rod connecting member (12) is folded and said pusher rod support angle bars (14) are turned in the opposite direction around said pivot points (16), said front legs (3), rear legs (4), support leg pusher rod connecting rods (1) and pusher rod bodies (6) are respectively turned toward each other while in response to the turning of said support leg connecting rods (1) said bar links (25) cause said connecting rod turning members (23) to slide upward while folding said front leg connecting rod (8), thereby establishing the folded state of the baby carriage in which the longitudinal, transverse and vertical dimensions thereof have been reduced.

4,362,316
FOLDING TRAILER
John O. Wright, 35 Heybridge St., Auckland, New Zealand
Filed Aug. 27, 1980, Ser. No. 181,748
Claims priority, application New Zealand, Aug. 29, 1979, 191427
Int. Cl.³ B60P 9/00
U.S. Cl. 280—656 **14 Claims**

1. A trailer comprising: a load bearing section comprised of

a front part and a rear part; a pair of wheels disposed in coaxially spaced relationship to each other and operatively connected to said load bearing section to support said load bearing section in a substantially horizontal towing configuration; and a draw bar projecting beyond the front of said load bearing section substantially perpendicular to the axis of said wheels to enable engagement of said trailer with a towing vehicle, said load bearing section being foldable between a first position in which said two parts lie in a substantially common plane and a



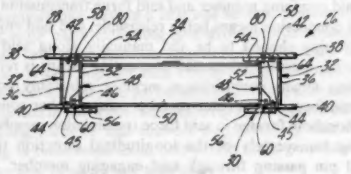
second position in which said two parts are juxtaposed in substantially parallel planes, said axis being so located to permit said load bearing section when in said second position to be supported by said wheels in a substantially horizontal configuration and to be moved to a substantially vertical configuration in which vertical configuration said load bearing section is substantially supported by an end of said front or rear part, said draw bar being pivotally associated with said load bearing section rearward of said axis when said load bearing section is in the substantially horizontal configuration.

4,362,317

EXTENSIBLE FRAME STRUCTURE FOR TRAILER TYPE LAND VEHICLE

Arthur C. Brockman, 14200 Jay Rd, Detroit, Mich. 48228, assignor to Arthur C. Brockman, Detroit, Mich.

Filed Dec. 15, 1980, Ser. No. 216,078
Int. Cl.³ B62D 53/06
U.S. Cl. 280—656 **14 Claims**



1. In a trailer type land vehicle, longitudinally extensible frame structure which comprises,

a first frame section having beams secured in longitudinally extending laterally spaced relation,

each beam having a vertical web and a lower flange portion which extends laterally inboard of said web, said flange portion having an exposed upper surface,

a second frame section having beams secured in longitudinally extending laterally spaced relation,

each of the latter said beams having a vertical web and a lower flange portion which extends laterally outward thereof,

the webs of said second frame section being disposed between said flange portions of said first frame section,

said flange portions of said second frame section projecting laterally beneath said flange portions of said first frame section,

shoe means projecting laterally outboard of each web in said second frame section and having a lower surface,

said lower surfaces being slideably engaged in load transmitting relation respectively on said upper surfaces,

said beams of said second frame section having a height not substantially less than that of the beams of said first frame section,

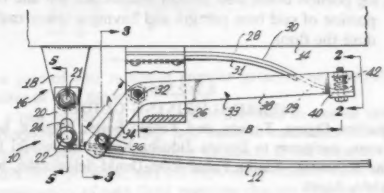
and means forming a longitudinally extending rail projecting upward from each flange portion of said first section inboard of said upper surface, said rails being effective to contain said shoe means against lateral disengagement from said upper surfaces.

4,362,318

SUSPENSION SYSTEM INCLUDING AUXILIARY SPRING FOR LIGHTLY LOADED CONDITIONS

Albert J. Lampert, Los Angeles, Calif., assignor to Cambria Spring Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 891,847, Mar. 30, 1978, Pat. No. 4,226,441, which is a continuation-in-part of Ser. No. 783,661, Apr. 1, 1977, Pat. No. 4,175,772. This application Oct. 14, 1980, Ser. No. 196,288
Int. Cl.³ B60G 11/04
U.S. Cl. 280—718 **13 Claims**



1. In a vehicle having a frame, an axle, at least one wheel mounted on said axle, a suspension system comprising:

a main spring connected to said axle and urging said axle away from said frame;

hanger means attached to the frame of said vehicle for retaining said main spring while permitting vertical travel thereof within a predetermined vertical range;

an auxiliary spring; and

spring force multiplication means for multiplying the force of said auxiliary spring and for applying said force to said main spring so as to urge said main spring toward the lower end of said range.

4,362,319

STEERING ASSEMBLY SUPPORTING DEVICE OF A MOTOR VEHICLE

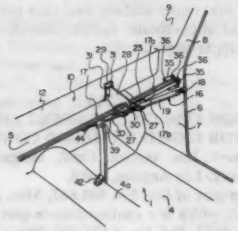
Kunihiko Masaki; Naoto Kitagawa, both of Toyota, and Kosaku Yamada, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 17, 1980, Ser. No. 188,254
Claims priority, application Japan, Jun. 11, 1980, 55-77849
Int. Cl.³ B62D 1/18
U.S. Cl. 280—779 **9 Claims**

1. A steering assembly supporting device of a motor vehicle comprising a steering assembly, a floor, front door opening flanges, first and second cowl side panels each extending forward from a front end of the corresponding front door opening flange, front pillars each forming a portion of the corresponding front door opening flange and having a root portion connected to the corresponding cowl side panel, a cowl inner panel spaced from the floor and transversely extending substantially in parallel to the floor at a position above the floor, and a dash panel arranged between the floor and the cowl inner panel, said device comprising;

a steering assembly supporting base portion transversely extending substantially in parallel to the cowl inner panel and comprising a first end fixed onto the first cowl side panel, a second end fixed onto the second cowl side panel,

a central portion, an intermediate portion located between said first end and said central portion and supporting said steering assembly thereon, a first portion located between said first end and said intermediate portion and having a hollow tubular cross-section, and a second portion of dish



shaped cross-section located between said second end and said intermediate portion; and

a leg portion connected to said second portion and central portion of said base portion and having a lower end fixed onto the floor.

4,362,320

WEBBING DRIVING GUIDE

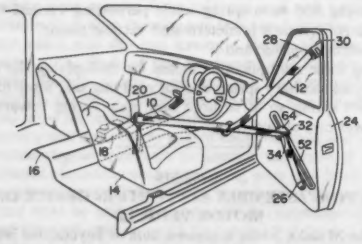
Mitsuhiro Ogura, Toyota, and Toshio Saito, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, both of Aichi, Japan

Filed Sep. 29, 1980, Ser. No. 191,495

Claims priority, application Japan, Oct. 8, 1979, 54-140377[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **15 Claims**



1. A webbing driving guide for use in a seatbelt system having a webbing, at least one end of which is engaged with a door, and another end of which is engaged with a retractor, said webbing being movable forward or rearward in a vehicle in accordance with the respective opening or closing action of said door whereby an occupant of said vehicle is free to enter and leave said vehicle, comprising:

(a) suspending means for suspending an intermediate portion of said webbing on the side of said door, said suspending means including,

a roller, on which said webbing is wound,

an arm supporting said roller,

a bracket secured to said arm at a position apart from one end of said roller by a distance of 1/5 to 2/5 of a length which is defined by the length of said roller which effectively supports said webbing in a lateral direction of said webbing, said bracket being twisted at a predetermined angle so that an end of said roller farthest from said bracket recedes from an inner side surface of said door;

(b) supporting means for supporting said suspending means at said door;

(c) driving means for driving said supporting means to drive said suspending means along a guide member on said door; and

(d) connecting means for connecting said suspending means to said supporting means.

4,362,321

DEVICE FOR PASSIVE ACTUATION OF A SAFETY BELT

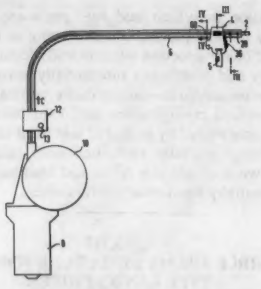
Hans-Joachim Volk, Ebersdorf, and Michael Forkel, Coburg, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,916

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951880

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **16 Claims**



1. Device for the passive actuation of a safety belt, comprising a motor driven elongated force transmission member, an engaging member for a safety belt engageable with and movable by said force transmission member, wherein the improvement comprises means for forming a driving connection between said engaging member and said force transmission member, said connection means being releasable, and said engaging member being shaped to be slid manually along said force transmission member when said connecting means is released, connecting means comprising a member releasably coupled within said force transmission member, said member comprises a pin, a borehole formed in said force transmission member and extending transversely of the longitudinal direction thereof and said pin passing through said engaging member, and a rocking lever pivotally attached to said engaging member and engageable with said pin for disengaging said pin from said borehole in said force transmission member.

4,362,322

SKI STICK

Jochen Schwarz, 39 1/2 Post Bruckmuhl, Ginsham, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,186

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927398; Jan. 22, 1980, 3002102; Mar. 25, 1980, 3011514

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—821 **13 Claims**

1. A ski stick comprising a ski stick tube; a sprung ski stick handle having a handle body and top handle fixing means, said top handle fixing means being at least in part fixed on the top end of the ski stick tube, said handle body being displaceable with respect to the ski stick tube; and spring means arranged between the ski stick handle body and the ski stick tube which

comprises resiliently stretchable cords which run through the ski stick handle body from the top handle fixing means toward

the bottom end of the ski stick handle body and are joined to the ski stick handle body at the bottom end thereof.

4,362,323

PIPE PART WITH A SOCKET END

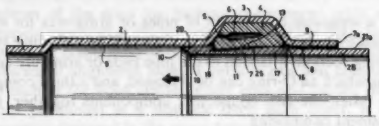
Bernhard Lodder, Hardenberg; Jan P. van Dongeren, Bergentheim, and Gerard A. E. Blok, Gramsbergen, all of Netherlands, assignors to Wabin B.V., Zwolle, Netherlands

Continuation of Ser. No. 18,904, Mar. 9, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,722

Claims priority, application Netherlands, Mar. 13, 1978, 7802712; Mar. 13, 1978, 7802713; Mar. 13, 1978, 7806354

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—4 **17 Claims**



1. A pipe part having a socket end for receiving a male pipe part, said socket end having an internal groove,

an annular sealing member disposed in said groove,

a support ring supporting said annular sealing member,

said support ring having a first and second deformable sealing edge parts extending therefrom which sealingly engage said pipe part on opposite ends of said internal groove, said support ring compressing said sealing ring less than a male pipe part after its insertion, and a lubricant disposed in the space between overlapping portions of said sealing member and support ring whereby said support ring is removable from below said sealing member upon insertion of said male pipe part.

4,362,324

JOINTED HIGH PRESSURE CONDUIT

John W. Kelly, Burbank, Calif., assignor to Haskel Engineering & Supply Company, Burbank, Calif.

Filed Mar. 24, 1980, Ser. No. 133,009

Int. Cl.³ F16C *27/00*

U.S. Cl. 285—119 **8 Claims**

1. A high pressure hydraulic tool comprising:

a source of hydraulic pressure including intensifier means for producing a fluid pressure of at least 30,000 psi;

power head means for applying said fluid pressure to a work piece;

a plurality of rigid thick-walled sections arranged end to end from said source to said power head means; and

a plurality of joint means for connecting said sections to each other, to said source and to said power head means to form a conduit for the transmission of said fluid pressure, each of said joint means comprising:

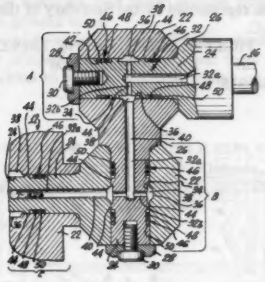
(a) a thick-walled outer member having a bore therein;

(b) a generally cylindrical thick-walled inner member rotatably received within said bore;

(c) an annular cavity defined between said outer and inner members;

(d) an outer passageway for hydraulic fluid extending through said outer member and opening into said cavity;

(e) an inner passageway for hydraulic fluid extending through said inner member and opening into said cavity, thus communicating with said outer passageway;



(f) a pair of seal retaining annular grooves on opposite sides of said cavity;

(g) a pair of sealing means each disposed in one of said grooves for permitting free relative rotational movement of said outer and inner members in the absence of said fluid pressure, and for expanding radially upon the application of said fluid pressure thereto thereby rendering said joint immovable and preventing the escape of said fluid from said cavity; and

(h) means for securing said inner member within the bore of said outer member.

4,362,325

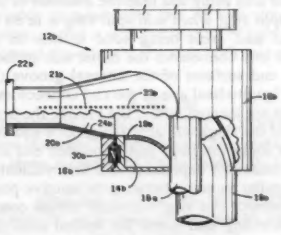
LIMITED ANGLE PIGGABLE SWIVEL

John E. Ortloff, and W. Robert Wolfram, Jr., both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Nov. 17, 1980, Ser. No. 207,482

Int. Cl.³ F16L *27/08*

U.S. Cl. 285—190 **3 Claims**



1. A fluid swivel comprising a stationary cylindrical shaft and a rotatable housing member, said shaft having a conduit positioned therein extending from the base of said shaft to the side of said shaft, said base end of said conduit adapted to mate with a first fluid line, said rotatable housing member circumferentially mounted around said shaft in sealing engagement, said housing member having a passageway extending therethrough having an inner and outer end, said outer end adapted to mate with a second fluid line, said housing member adapted to rotate around said shaft to enable coaxial alignment of said conduit

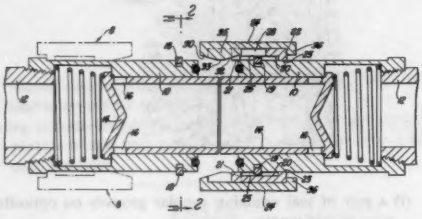
and said passageway, said inner end of said passageway being flared outwardly in an amount sufficient to enable a traveling member, having a circumferential dimension substantially equal to circumferential dimension of said conduit, to pass from said conduit to said passageway when the longitudinal axis of said passageway is angularly offset from the longitudinal axis of the side end of said conduit.

4,362,326

DISCONNECTABLE COUPLING

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1981, Ser. No. 230,922
Int. Cl.³ F16L *37/08*
U.S. Cl. 285—315 4 Claims



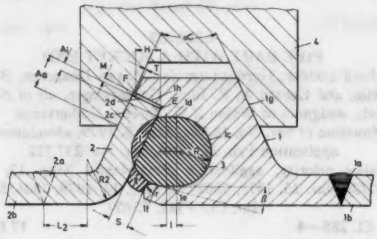
1. In association with two separable tubes having similar end connectors (10) adapted to abut one another; improved means for removably joining the end connectors, comprising a first resilient split ring (18), having radial side surfaces seated in an endless external groove in one of the end connectors for outward radial motion from a contracted position contained within the end connector profile to an expanded position projecting outwardly beyond the end connector profile; a second ring (19) having radial side surfaces carried by the other end connector and projecting radially beyond the end connector profile; an axially slidable collar (20) mounted on said other end connector for movement between an inactive position spaced from said first ring to a locking position spanning said first and second rings; the internal surface of the collar defining a first land area (21) at one end of the collar, a second land area (23) at the other end of the collar, and an intervening internal groove (25) that has an axial dimension defined by end surfaces that are axially spaced the same as the distance between the rings when the end connectors are abutted together; the diameter of each land area being less than the diameter of the second ring and the split ring when said split ring is in its expanded condition, said land areas being sized to ride on the outer surfaces of the end connectors the radial side surfaces of the rings and the end surfaces of the internal groove (25) being normal to the longitudinal axis of the end connectors whereby when the rings are located within the groove the nonadjacent side surfaces of the rings will abut the groove end surfaces so that the collar locks the rings and associated end connectors together; and means for depressing said first resilient split ring to enable the collar to move between its inactive position and its locking position; said ring depresser means comprising a sleeve (24) encircling said collar for limited axial movement along the collar outer surface, said sleeve having two opposite divergent internal cam surfaces (30, 32) and an intervening land surface (33) on the end of the sleeve nearest said one end connector, whereby when the sleeve-collar assembly is moved to a position spanning the two end connectors one of said cam surfaces (30) depresses said resilient split ring to its contracted position, the collar being dimensioned so that its first land area (21) passes over said split ring while said split ring is being retained in its depressed position by the aforementioned sleeve land surface (33); the other cam surface (32) being located closely adjacent the resilient split ring when the collar is in its locking position, whereby movement of the sleeve away from said one end connector causes said other cam surface (32) to move over the resilient split ring to depress same to its contracted position, after which the aforementioned land surface (33) holds the resilient split ring in its contracted position while said sleeve moves the collar so that the first land area (21) passes over the split ring.

4,362,327

SEPARABLE PIPE AND/OR ARMATURE CONNECTION

Hans O. Mieth, Hamburg, Fed. Rep. of Germany, assignor to Otto Tuchenhagen GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 17, 1980, Ser. No. 130,609
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910684
Int. Cl.³ F16L *19/06*
U.S. Cl. 285—332.3 2 Claims



1. In a separable connection of pipes or armatures for systems which must meet hygienic requirements, including two connecting sections attached to the pipe ends or armature ends between which an O-ring can be arranged, and a third component to fasten the two connecting components together, the improvement comprising

one connecting component having a frustoconical outer clamping face and a frustoconical inner contact face and a second surface extending outwardly from its frustoconical contact face to form a recess in which the other connecting component can be inserted,

the other connecting component being the flared end of a pipe or armature with a frustoconical outer clamping face and a frustoconical inner contact face,

the second surface of the one connecting component providing guidance of the other connecting component, the frustoconical contact face of the recess positioning the other connecting component in the assembly without contact between the connecting components at the second surface of the one connecting component,

the one connecting component having an O-ring groove in its frustoconical contact face with a bottom having a radius which is smaller than the radius of the undeformed O-ring, with an outer face extending tangentially from the outermost point of the groove bottom to the frustoconical contact face, and with an inner face extending tangentially from the innermost point of the bottom groove for a length equivalent to the stretched length of the O-ring in place in the groove and thereafter into a beveled face with its inclination angle reducing the width of the groove to less than twice the radius of the undeformed O-ring, said O-ring groove being sheltered by the second surface,

the inner face of the O-ring groove extending into a surface forming, upon assembly, a gap with an opposing surface of the other connecting component,

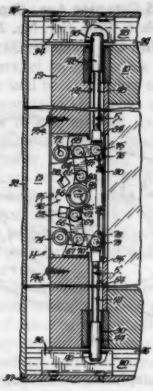
the third component being split in the cross-sectional plane of the connection and having a pair of frustoconical surfaces to engage the frustoconical outer clamping faces of the two connecting sections and compress them together in the direction of their central axis of symmetry.

4,362,328

PATIO DOOR LOCK

John C. Tacheny, Owatonna; Gary F. Paulson, Waseca, and Jerome W. Natzel, Owatonna, all of Minn., assignors to Truth Incorporated, Owatonna, Minn.

Filed May 19, 1980, Ser. No. 150,714
Int. Cl.³ E05C 1/12
U.S. Cl. 292—36 4 Claims



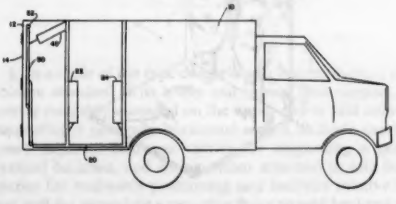
1. A door lock for a movable door having a pair of vertically aligned movable bolts positioned one at the top and one at the bottom of the door for locking engagement with a pair of keepers mounted at the top and bottom of the door frame, and means for positioning said bolts including a pair of bolt rods in substantial alignment along a vertical axis and connected one to each of the bolts at their outer ends and having their inner ends positioned at a distance from each other, a rotatable operator disposed in the space between said inner ends, a pair of bolt rod actuating links each pivotally fixed relative to the door and extending generally normal to the length of said bolt rods, each of said links being pivotally connected to one of said bolt rods at a connection lying in said vertical axis, and means interconnecting said rotatable operator and said links for movement of said links through a relatively short arc which is generally along said vertical axis to exert force axially of said bolt rods, said interconnecting means including an over-center link structure, spring means effective to urge said link structure over-center, and stop means for limiting movement of said link structure in either direction beyond said over-center position.

4,362,329

MOBILE SERVICE VEHICLE

Dennis Laube, Wapakoneta; Michael Bell, Gahanna, and Daniel E. Hausch, Findlay, all of Ohio, assignors to Countdown, Columbus, Ohio

Filed Sep. 4, 1980, Ser. No. 148,296
Int. Cl.³ B60P 3/34
U.S. Cl. 296—26 5 Claims



1. A mobile repair/service vehicle, having a pair of horizontally swinging doors at its rear opening, modified to provide a service bay, comprising:

a roof structure hingedly connected along the upper portion of the rear opening of the vehicle,

said roof structure raisable to extend rearwardly and outwardly of the rear opening over said service bay from a lowered upright position extending vertically at the rear of the inside of the vehicle, and means for maintaining said roof structure in its raised position in cooperation with the rear doors when open;

the rearmost portion of the floor of said vehicle having means for lowering said floor portion from its normal height to ground level,

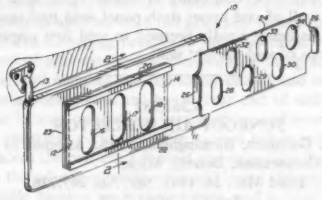
said portion of floor further including an extendable portion hingedly connected thereto to extend from a closed upright position to an open position resting on the ground.

4,362,330

SEE THROUGH AUTOMOBILE SUN VISOR

Francis W. Cramer, 4158 Caywood Cir., Orlando, Fla. 32810

Filed Nov. 17, 1980, Ser. No. 208,169
Int. Cl.³ B60J 3/00
U.S. Cl. 296—97 F 9 Claims



1. An automobile sun visor comprising:

(a) a flat visor member having opposing flat parallel surfaces and adapted to be pivotably joined adjacent the windshield of an automobile, said member having plural slots therein;

(b) a moveable member having slots therein;

(c) means for mounting said moveable member against said visor member and over said slots in said flat visor member, whereby said moveable member may be moved to align a slot in said moveable member with a slot in said visor member; and wherein

(d) movement of said moveable member permits the automobile operator to align at least one of said slots in said moveable member with one of said slots of said visor member, so that a retricted amount of light is visible along a selected line-of-sight through both said members.

4,362,331

AUTOMOBILE FRONT BODY CONSTRUCTION

Hayathugu Harasaki, and Yoshihiro Morimoto, both of Hiroshima, Japan, assignors to Tokyo Kogyo Co., Ltd., Hiroshima, Japan

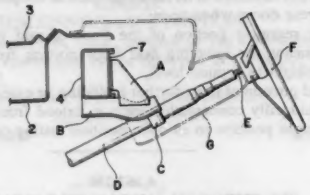
Filed Jan. 8, 1981, Ser. No. 223,293
Claims priority, application Japan, Jan. 16, 1980, 55/3770[U]
Int. Cl.³ B60K 20/08
U.S. Cl. 296—194 6 Claims

1. In an automobile front body having a steering column, the improvement comprising:

a pair of front pillars for hingedly supporting left and right doors of the automobile;

an upper dash panel protruding frontwardly of the automobile front body, to which said steering column is fixed, respectively fixed at opposite ends to each of said pair of front pillars, said upper dash panel having an upright wall having first opposite end portions adjacent said opposite ends; and

a reinforced beam assembly including an elongated main frame member of generally U-shaped cross-section, having a wall section and upper and lower flanges respectively extending along its length between said pair of front pillars, defining three sides of a first space having a generally rectangular cross-section, and an elongated closure member spaced from said wall section in face-to-face relation thereto along the entire said length to close said



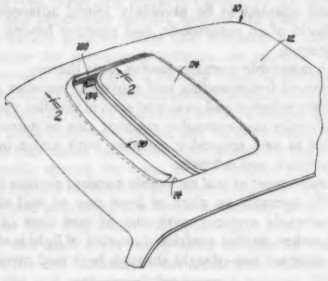
generally rectangular cross-section of said first space and rigidly fixed at opposite ends to said pair of front pillars; said reinforced beam assembly having a central portion and two second end portions at opposite sides of said central portion, being located rearward of said upper dash panel, said central portion being in spaced relation to said upright wall of said upper dash panel, said two second end portions being rigidly secured to said first opposite end portions of said upright wall.

4,362,332

SUNROOF AIR DEFLECTOR

Edward E. Garnham, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1981, Ser. No. 247,726
Int. Cl.³ B60J *7/04*
U.S. Cl. 296—217 **3 Claims**



1. In combination with a vehicle body roof panel having a roof opening, and a sunroof closure panel adapted for movement between a forward closed position and a rearward open position, an air deflector device comprising:

a deflector panel adapted for mounting within the roof opening at an angularly raised position projecting above the roof panel to deflect oncoming airflow above the roof opening;

mounting means mounting the deflector panel for pivotal movement between the angularly raised air deflecting position and a downwardly pivoted position below the roof panel;

track means acting between the vehicle body and the mounting means and adapted to permit longitudinal translation of the deflector panel between a rearward position registering with the roof opening and a stored position beneath the roof panel substantially forward of the roof opening;

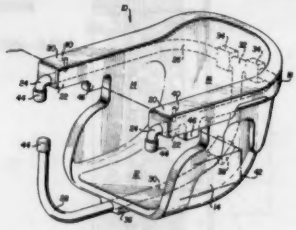
and operating means operatively associated with the mounting means selectively coupled with the closure panel during forward movement of the closure panel to effect downward pivotal movement of the deflector panel from the angularly raised position and bodily forward movement of the deflector panel to the stored position substantially forward of the sunroof opening.

4,362,333

SELF-SUPPORTING INFANT CHAIR

Daniel E. Cohen, 2515 Cumming Ave., Superior, Wis. 54880

Filed Feb. 6, 1981, Ser. No. 232,224
Int. Cl.³ A47B *39/00*
U.S. Cl. 297—174 **19 Claims**



1. An infant chair adapted to be self-supporting from a horizontally disposed table surface, comprising:

a seat portion, a back portion, and a pair of sidewall portions;

first support arm means comprising a single frame member defining a pair of arms projecting outwardly from said sidewall portions of said chair, and a rear portion operatively associated with said back portion of said chair;

second support arm means projecting outwardly from said seat portion of said chair;

said first and second support arm means defining a horizontal channel therebetween within which said table surface is to be disposed and for engaging the upper and under surfaces of said table respectively; and

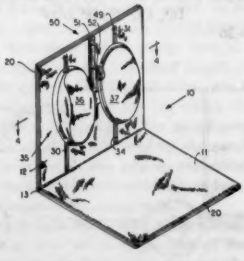
said second support arm means being integrally connected to said rear portion of said first support arm means single frame member so as to form a one-piece support arm framework for supporting said chair from said table surface.

4,362,334

PORTABLE FOLDING ORTHOPEDIC SEAT

Robert M. Ross, Redondo Beach, and George M. Kristof, Gardena, both of Calif., assignors to Accu-Back, Inc., Carson, Calif.

Filed Oct. 14, 1980, Ser. No. 196,387
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—230 **21 Claims**



1. In a portable folding orthopedic seat unit having:

a seat member hinged to a back member with an internal rigid support frame extending from the bottom to the top of said back member, and a cloth cover enclosing said seat member and said back member,

a pair of separate, padded, generally elliptically-shaped, back-support members, spaced apart from each other and joined by a horizontally rigid connecting member,

each said back-support member comprising a rigid rear portion attached to said connecting member, a forward resilient portion supported on said rear portion, and cloth cover means enclosing said resilient portion and said rear portion,

the combination therewith of:

two vertical parallel internal track support members attached inside said back member to said rigid frame,

two parallel separate guide tracks attached through said back member to said internal track support members, extending substantially from the bottom to the top of said back member,

slidable clip means reciprocal with said guide tracks attached to the back of said rigid rear portion of said pair of back support members, for slidably mounting said back-support members on said guide tracks, said pair of back-support members being slidably disposed on said parallel guide tracks,

a first strip of material attached to the middle of said back member parallel with said guide tracks, and,

a second strip of material which adheres to said first strip of material upon contact therewith, said second strip being attached to said horizontally rigid connecting member and disposed vertically upwardly between said back-support members,

whereby said back-support members may be adjusted to solely support the lower back of a person sitting in said seat unit by sliding said pair of back-support members on their guide tracks to a desired position and securing said second strip of material to said first strip of material, thereby holding said back-support members at the desired position.

4,362,335

ADJUSTABLE CHAIR BACKREST MECHANISM USING PNEUMATIC AND MECHANICAL SPRINGS

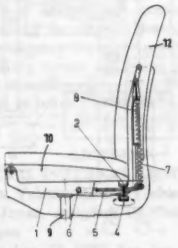
Fritz Drabert, Marienstrasse 37, and Ulrich H. von Waldegge, Weidestr. 35, both of D-4950 Minden, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,872

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 7928353[U]

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—300 **4 Claims**



1. In a chair of the type comprising a base support, a vertical column attached at its lower end to said base support, a seat carrier rotatably mounted on the upper end of said column for supporting a generally horizontal seat, a backrest carrier disposed adjacent said seat carrier for supporting a generally vertical backrest, and spring means attached to said backrest carrier for resiliently positioning said backrest relative to said seat and for providing a restoring force to said backrest carrier when it is angularly displaced relative to said seat, the improvement wherein said backrest carrier comprises a pair of laterally spaced bars each of which includes a generally horizontal portion the forward end of which is pivotally attached to said seat carrier at a first point located between the front and rear edges of said seat carrier, the rearward end of the said generally horizontal portion of each bar being integral with a generally vertical portion of said bar that extends in an upward direction adjacent to the rear edge of said seat carrier, a structural member extending between and interconnecting the vertical portions of said bars at a position above and relatively widely spaced from the rear edge of said seat carrier, said spring means comprising a generally vertically oriented pneumatic spring located between and extending generally parallel to the vertical portions of said bars, said pneumatic spring being operative to exert a restoring force on said backrest carrier and comprising a cylinder and piston one of which is directly attached to said structural member and the other of which is directly attached to the rear edge of said seat carrier, a generally horizontal lever located between and extending generally parallel to the horizontal portions of said laterally spaced bars, said lever having a forward end which is pivotally attached to said seat carrier at a second point that is located between one of said first points and the rear edge of said seat carrier, the rear end of said lever being disposed closely adjacent to the rear edge of said seat carrier, said spring means further comprising a generally vertically oriented mechanical draw spring located between the generally vertical portions of said bars and extending parallel to said pneumatic spring, the upper end of said mechanical draw spring being attached to said structural member and the lower end of said mechanical draw spring being attached to the rear end of said lever, an abutment located on said seat carrier above and overlying said lever, a generally vertical spindle located below said seat carrier adjacent the rear edge thereof and extending through said lever in thread engagement with said lever, the upper end of said spindle bearing on said abutment, and a hand wheel attached to said spindle for rotating said spindle to move said lever toward and away from said abutment by angularly displacing the rear end of said lever about said second point thereby to vary the force which is exerted on said backrest carrier by said mechanical draw spring, the force exerted by said mechanical draw spring being in opposition to the restoring force exerted on said backrest carrier by said pneumatic spring whereby angular movement of said lever in a direction which increases the force that is exerted by said mechanical draw spring operates to reduce the total restoring force exerted on said backrest carrier by said spring means.

4,362,336

SLIDING CHAIR

Otto Zapf, Herzog-Adolph-Str. 5, 6240 Königstein, Fed. Rep. of Germany, and Josef Kuchinke, Oberusel, Fed. Rep. of Germany, assignors to Otto Zapf, Konigstein, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 130,136

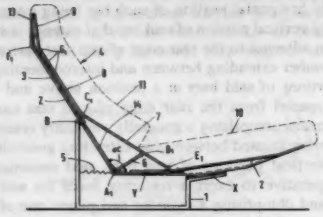
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914200; Apr. 26, 1979, 2916897

Int. Cl.³ A47B *1/023*

U.S. Cl. 297—317 **8 Claims**

1. In a chair type article of furniture in which a seat member is movable generally horizontally and is articulated to a back rest which is supported at a lower portion thereof for generally horizontal movement with said seat member and is also articulated to the frame of said article of furniture at a location above said lower portion thereof for rearward reclining there of when said seat member moves forwardly, the improvement comprising a back plate positioned forwardly of said back rest, a lower portion of said back plate constituting a support for the lumbar region of a person sitting on the furniture and being supported for generally horizontal movement with said seat member, said back plate being supported by said back rest at a location above said lower portion of said back rest for rear-

ward reclining thereof when said back rest reclines rearwardly from an upwardly directed and non-reclining position to provide support for said lumbar region of a seated person, said back plate being divided by a pivotal joint into upper and



lower back plate sections, and guide means between said back rest and said back plate for allowing relative movement between said back rest and said back plate in the general direction of movement of said seat member.

4,362,337

TUNNELING SYSTEM

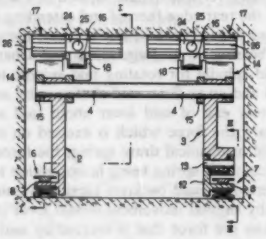
Paul Casanova, Paris, France, assignor to Techniques Industrielles et Minieres, Paris, France

Filed Jun. 18, 1980, Ser. No. 160,459

Claims priority, application France, Jun. 21, 1979, 79 15908

Int. Cl.³ E21D *9/10*

U.S. Cl. 299—31 **16 Claims**



1. In a tunneling system, comprising a cutting tool articulated on a frame and mounted so as to be movable along the height of the mine face, said frame being provided with ground support means and with propulsion means for following the progress of the cutting, the articulation point of the cutting tool being situated in the upper half of the system in any operating position; the improvement wherein the frame comprises two upstanding lateral flanges with a free space between them, the cutting tool being mounted for vertical swinging movement on a horizontal shaft that is supported at its ends by said flanges, the space below that portion of the shaft that is between its supported ends being open down to the ground to give access to the mine face for staff and any apparatus.

4,362,338

SAFETY DEVICE TO ACTUATE RAILROAD CAR AIR BRAKE

Charles D. Sanchez, Manson, Iowa 50563

Filed Feb. 12, 1981, Ser. No. 233,676

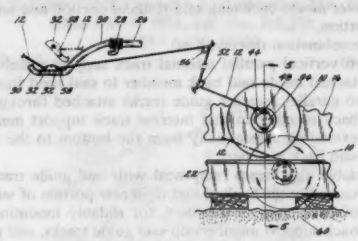
Int. Cl.³ B60T *11/26*

U.S. Cl. 303—86 **6 Claims**

1. Apparatus to automatically actuate the air brake system on a train of railroad cars at the onset of a derailment, said train including a predetermined number of coupled cars each supported at respective front and rear ends on a wheeled truck frame for riding on a railbed and provided with a pressurized air brake system that includes a rigid train line on each car connected by a flexible hose with coupling to a like hose and coupling on each adjacent car, said apparatus comprising:

a wheel,

means mounting said wheel to one said wheeled truck frames so that when said frame is in railbed engagement, said wheel is in a predetermined spaced relationship above said railbed,



a flexible cable operably secured at one end to and windable on said wheel and operably connected at its other end to said train line, and

derailment of said wheeled truck frame effective in moving said wheel into ground engagement to cause it to rotate and wind up said cable so as to break said train line and immediately actuate the air brake system on the train.

4,362,339

HYDRAULIC BRAKE SYSTEM WITH AN ANTISKID CONTROL APPARATUS

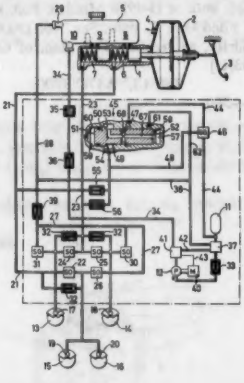
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 23, 1981, Ser. No. 227,895

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010639

Int. Cl.³ B60T *8/08*

U.S. Cl. 303—117 **13 Claims**



1. A hydraulic brake system having an antiskid control apparatus comprising:

a master brake cylinder;

a fluid return line;

at least one wheel brake cylinder;

antiskid control valves coupled to said master cylinder, said wheel cylinder and said return line to connect said wheel cylinder to one of said master cylinder and said return line; and

a valve device coupled to a fluid source, said master cylinder and said return line to connect fluid from said fluid source to said wheel brake cylinder through a passage in said valve device and at least one check valve opening in opposition to master cylinder pressure, said valve device being controlled by a piston having a first end surface acted upon by said master cylinder pressure in the sense of opening said passage in said valve device and a second end surface acted upon by the pressure of said fluid of said source in the sense of closing said passage in said valve device.

4,362,340

TRACKED VEHICLES

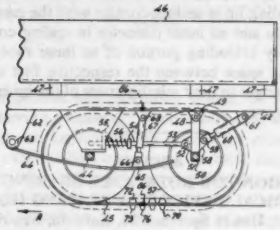
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 895,024, Apr. 10, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 210,020

Claims priority, application Netherlands, Apr. 15, 1977, 7704127; Apr. 15, 1977, 7704128

Int. Cl.³ B62D *55/24, 55/04*

U.S. Cl. 305—31 **27 Claims**



1. A vehicle included in the group which comprises tractors, motorcars, soil cultivating machines, trucks, wagons and the like, said vehicle comprising a frame and at least two pairs of aligned wheels, one said pair on each side of the vehicle, each said wheel comprising at least one pneumatic tire, each said pair of wheels being mounted in tandem, at least one of said wheels in each said pair of wheels being driven and having its axis in a fixed position relative to said frame, at least one removable track selectively received around each said pair of wheels, means for selectively rapidly removing and installing said track around each pair of said wheels including a hydraulically operable device for selectively shortening the distance between said wheels sufficiently to permit installation of each said track around the corresponding pair of said wheels, resilient means which is operatively coupled with said device biased for lengthening the distance between each said pair of wheels thereby tensioning the corresponding said track, and a single actuable lifting means for lifting both pairs of wheels from the ground simultaneously, said lifting means centered between said pairs of wheels as seen from the rear.

4,362,341

LOW-NOISE LEVEL INTERNAL COMBUSTION ENGINE

Yasuo Matsumoto, Yokohama, and Yoshimasa Hayashi, Kamakura, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 23, 1980, Ser. No. 142,960

Claims priority, application Japan, Apr. 25, 1979, 54-56320[U]

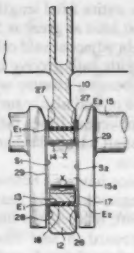
Int. Cl.³ F16C *9/00*

U.S. Cl. 308—26 **8 Claims**

1. An internal combustion engine having a bore for receiving a crankshaft which bore is defined between opposed semicylindrical surfaces located respectively on a cylinder block and a bearing cap, said engine comprising:

a cylindrical housing disposed in said bore;

a metal sleeve bearing extending coaxially through and fixedly retained in said cylindrical housing, said metal sleeve bearing having a journal of said crankshaft rotatably supported therein; and



a cylindrical elastic member disposed between the outer surface of said cylindrical housing and the semicylindrical surfaces of the cylinder block and the bearing cap, thereby absorbing vibration transmitted to the crankshaft.

4,362,342

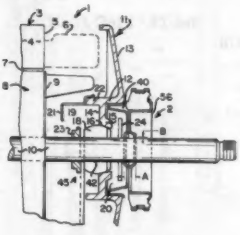
BEARING CLOSURE ASSEMBLY

Ray E. Bushor, and Robert F. Bischoff, both of Florissant, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 887,947, Mar. 20, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,357

Int. Cl.³ F16C *33/74;* **H02K** *5/16*

U.S. Cl. 308—36.1 **11 Claims**



1. A bearing closure assembly for a motor, the latter having a shaft and a bearing for journalling the shaft, said bearing closure assembly having means for effectively preventing airborne lint or dust from entering said bearing and yet for permitting increased radial tolerances between said shaft and said bearing closure assembly, said airborne dust preventing means comprising a generally planar surface of said bearing closure assembly on the outboard side of said bearing and another portion connected to said planar surface defining an opening for reception of said shaft, said other portion having an axial length of dimension A and clearing said shaft at its closest point along the entire axial length of A dimension by a dimension B with the ration A/B being at least as great as 5/1, said planar surface being defined by a first part and a second part, each of said parts having a layer of material attached to one another to delimit said surface, said other portion being formed from the material layers of said first and second parts and extending therefrom in axially opposite directions.

5. A bearing closure assembly for a motor, the latter having a shaft and a bearing for journalling the shaft, said bearing closure assembly having means for effectively preventing airborne lint or dust from entering said bearing and yet for permitting increased radial tolerances between said shaft and said bearing closure assembly, said airborne dust preventing

means comprising a generally planar surface of said bearing closure assembly on the outboard side of said bearing and another portion connected to said planar surface defining an opening for reception of said shaft, said other portion having an axial length of dimension A and clearing said shaft by a dimension B along the entire axial length of A dimension with the ration A/B being at least as great as 5/1, said planar surface having a groove therein adjacent said other portion and generally concentric therewith, said groove being open toward the outboard side of said bearing closure whereby water running down the outer surface of said planar surface toward said other portion enters said groove and flows therein around said other portion clear of said shaft and is discharged from said groove blow said other portion.

9. In an electric motor having a bearing support including a hub, a shaft with a longitudinal axis, bearing means in said hub for journalling said shaft, wherein the improvement comprises: a bearing closure outboard of said bearing and surrounding said shaft, but being clear thereof, and being adapted to be secured on said hub, said bearing closure including a wall, and a flange supported by said wall and surrounding said shaft, said flange extending axially from said wall outwardly from said motor, whereby water running down the ouside of said wall toward said flange engages said flange and flows around said flange so as to prevent this water from entering said bearing, said flange having a portion thereof which extends axially inwardly toward said bearing relative to said wall.

4,362,343

AXIAL BEARING

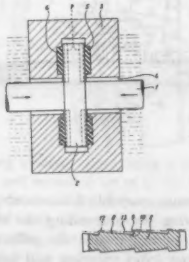
Teunis Visser, Sliedrecht, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Apr. 16, 1981, Ser. No. 254,983

Claims priority, application Netherlands, Apr. 18, 1980, 8002281

Int. Cl.³ F16C *17/04*

U.S. Cl. 308—170 **2 Claims**



1. An axial bearing consisting of a rotary disc provided with grooves mounted on a shaft and a stationary ring-shaped disc in a house characterized in that the stationary disc consists of elastomeric material and that the grooves have at least one flank at a small angle with the surface of the stationary disc, the opening of said angle being directed in the direction of rotation.

4,362,344

SEALED BALL BEARING WITH STAMPED RACES

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1981, Ser. No. 289,491

Int. Cl.³ F16C *33/78*

U.S. Cl. 308—187.1 **4 Claims**

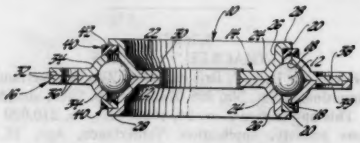
1. A bearing, comprising,

a pair of inner bearing races, each having a curvilinear raceway, a pair of outer bearing races concentric with the inner races, each outer race having a curvilinear raceway in confronting relation to a respective raceway of an inner race,

a complement of antifriction elements disposed in rolling engagement between the confronting raceways of the inner and outer races,

the raceway of each inner race further including an axially extending portion and a radially extending portion terminating in a first circular edge,

the raceway of each outer race further including a second



circular edge which is of substantially the same radius as the first circular edge and is axially spaced therefrom,

an annular seal disposed in the space between each respective first and second circular edge, each seal including an outer sealing lip in sealing contact with the raceway of an outer race and an inner diameter in sealing contact with the axially extending portion of an inner race, each seal filling the space between the respective first and second circular edges to limit misalignment of the inner and outer bearing races.

4,362,345

PROVISION FOR ROTATABLE BEARING OF A CYLINDRICAL DEVICE IN A BEARING HOUSING

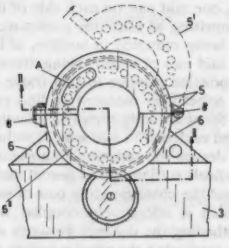
Peter Zimmer, Untere Sparchen 54, Kufstein, Austria (A-6330)

Filed Sep. 12, 1980, Ser. No. 186,428

Claims priority, application Austria, Sep. 13, 1979, 6021/79

Int. Cl.³ F16C *13/00*

U.S. Cl. 308—207 R **8 Claims**



1. A bearing assembly for a replaceable cylindrical component, comprising:

an annular bearing housing formed by a pair of housing members and defining a separating plane, said housing being formed with a circular lateral opening;

pivot means for swingably interconnecting said members on one side of a separating plane thereof whereby at least one of said members can be swung away from the other of said members about a pivot axis defined by said pivot means to enable removal of said component from and replacement of said component in said bearing assembly;

a multiplicity of roll bodies spaced around said housing and protruding through said opening to bear upon said component;

respective bearing cages individual to said roll bodies and received in said housing members, said cages being movable with said roll bodies around said housing; and

support means for retaining said roll bodies and said cages in the respective housing members when said one of said

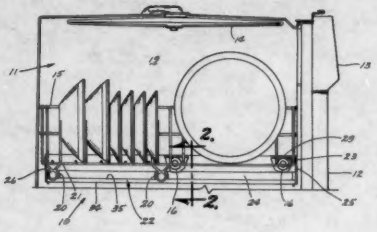
housing members is swung away from the other of said housing members.

4,362,346

DISHWASHER RACK MOUNTING TRACK

Clayton F. Emmert, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Oct. 9, 1980, Ser. No. 195,673
Int. Cl.³ A47B 88/00; F16C 17/00
U.S. Cl. 312—311 **11 Claims**



10. An improved rack mounting system for a dishwashing apparatus having a washing chamber with side walls and open at the front and further having a door for closing the open front, the combination comprising: a rack disposed in said washing chamber and including opposite side portions juxtaposed to said chamber side walls; a pair of rollers mounted on each of said chamber side walls; a pair of rollers mounted on each rack side portion; and a pair of elongated tracks with one of said tracks disposed between each of said chamber side walls and the adjacent one of said rack side portions, each of said tracks formed from a single unitary piece of sheet metal and defining a pair of oppositely opening flanged channels substantially vertically aligned one above the other, said channels each including lower and upper retaining flanges and lower and upper horizontal leg portions with the lower horizontal leg portion of the upper channel and the upper horizontal leg portion of the lower channel being a common member and with the side of each of said channels opposite said flanges closed by vertical wall members connecting said lower and upper leg portions, a first of said channels opening outwardly toward said chamber side walls to receive said pair of side wall mounted rollers, a second of said channels opening inwardly toward said rack to receive said pair of side portion mounted rollers, said lower flange of said first channel and said upper flange of said second channel comprising a double layer of sheet metal folded back on itself, said rollers being movable in said channels whereby said rack may be pulled from said chamber while supported by said tracks.

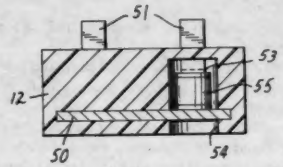
4,362,347

MODULAR CONNECTOR AND PROTECTOR

Sidney J. Berglund, Stillwater, and Gary B. Matthews, Birchwood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 75,737, Sep. 14, 1979, Pat. No. 4,272,147.
This application Nov. 26, 1980, Ser. No. 210,856
Int. Cl.³ H01R 13/66
U.S. Cl. 339—14 R **1 Claim**

1. An overvoltage protection module comprising an elongate body member, a bus bar passing longitudinally through said body member and extending outwardly at both ends, a series of protector capsules disposed within said body member with one end resting against said bus bar, and contact elements contacting the other end of each said capsule and extending above the outer upper surface of said body member as a series



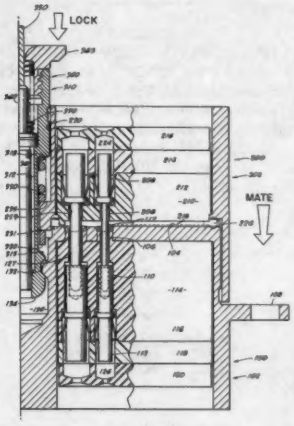
of transversely oriented blades disposed successively in two parallel longitudinal rows.

4,362,348

EMI: X-RAY PROTECTED MULTI-CONTACT CONNECTOR

Roger C. Stephenson, Woodland Hills, and Dale T. Chaput, Yorba Linda, both of Calif., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed Jul. 3, 1980, Ser. No. 165,648
Int. Cl.³ H01R 13/629, 13/658
U.S. Cl. 339—75 M **4 Claims**



1. A multi-contact plug and receptacle electrical connector comprising:

A. the receptacle comprising:

a conductive metal housing for mating with the plug including a face having perforations therein, said metal being capable of absorbing a substantial amount of X-ray radiation striking said face;

said face being thick enough to cause X-ray radiation entering said perforations at an angle to said face to be shielded from striking the electrical sockets positioned beneath said perforations;

the dimensions of said perforations being selected to form wave traps having a cut-off frequeny above the frequency of radio frequency electromagnetic energy striking said face during operational use of said receptacle; and

an insulator insert positioned beneath said face enclosing the sides of said sockets;

B. the plug comprising:

a conductive metal housing for mating with said receptacle, said plug metal being capable of absorbing a substantial amount of X-ray radiation striking said plug;

an insulative insert positioned within said plug housing,

said plug insert enclosing a portion of the length of electrical pin contacts for making electrical connection with sockets of said receptacle, and also enclosing a barrel portion of said pin contacts;

C. means for locking said receptacle and said plug in the mated relation;

D. means for rapidly unlocking said plug and receptacle and for disengaging said plug and receptacle from the mated relation; and

E. said means for locking and for rapidly unlocking said receptacle and plug including, in combination with said plug, a tubular means terminating in collet fingers, each of said fingers terminating in a finger tip, said finger tips being capable of closing to a roughly ball shape and opening to an expanded diameter;

a plunger movable longitudinally within said collet fingers and said collet finger tips, whereby when said plunger is in the extreme forward position, said finger tips cannot move inwardly and are locked in the expanded position within a recess included in said receptacle;

spring means associated with said plunger for maintaining said plunger in the forward position;

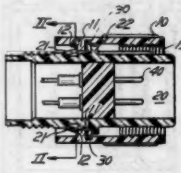
spring means associated with said tubular means for imparting rearward movement of said collet finger tips out of said recess, whereby said receptacle and said plug are unlocked and electrically disengaged.

4,362,349

ELECTRICAL CONNECTOR HOUSING WITH INTEGRAL RETENTION MECHANISM

David O. Gallusser, Oneonta; Valentine J. Hemmer, Sidney, and Gary C. Toombs, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,771
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—89 M **4 Claims**



1. In combination with an electrical connector of the type having: a housing having a central axis, a forward surface portion, a rear portion and a middle portion that includes an annular shoulder extending outwardly from said central axis; at least one electrical contact mounted in said housing; a tubular coupling member disposed around a portion of said housing, said coupling member having a rear portion that includes an annular shoulder extending inwardly towards said central axis and a forward portion adapted to connect to a similar housing having at least one contact adapted to mate with said contact in said housing; and means for mounting the coupling member to said housing, the improvement wherein the means for mounting said coupling member comprises:

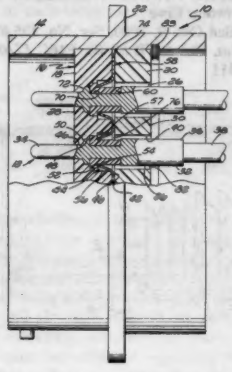
at least one finger integrally molded with and having a longitudinal axis extending outwardly and rearwardly from the forward surface portion of said housing, said finger resiliently and radially deflectable inwardly towards the central axis of said housing, the rearwardly facing end of said finger abutting the forward face of the annular shoulder of said coupling member, whereby said coupling member is mounted to said housing and may be removed from said housing by deflecting said finger.

4,362,350

CONTACT RETENTION ASSEMBLY

James L. von Harz, South Laguna, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,978
Int. Cl.³ H01R *13/648*
U.S. Cl. 339—143 R **21 Claims**



1. An electrical connector member comprising:

an insulator having a plurality of passages extending therethrough from a front face to a rear face thereof;

a contact retention plate extending transversely across said insulator substantially normal to the longitudinal axes of said passages;

said plate embodying apertures each aligned with a corresponding one of said passages;

a radially deflectable retention finger extending inwardly from the edge of each said aperture into its corresponding passage toward one of said faces; and

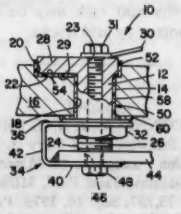
a contact in at least one of said passages having an insulative sleeve thereon formed with a shoulder directed toward the other of said faces and engaged by said finger whereby said finger restricts movement of said contact in the direction of said other face.

4,362,351

TERMINAL ASSEMBLY

John E. Wible, Painesville, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Feb. 6, 1981, Ser. No. 232,089
Int. Cl.³ H01R *9/16*
U.S. Cl. 339—214 R **12 Claims**



1. A terminal assembly (10) for providing a conductive path through a housing (16) comprising:

a terminal (12) having first (24) and second (28) end portions, the second end portion (28) being eccentric relative to the first end portion (24) and defining a stepped surface (29) therebetween;

a stepped bore (14) defined in the housing (16) by first (18) and second (20) cylindrical surfaces and a stepped surface (22) therebetween, the second cylindrical surface (20) being eccentric relative to the first cylindrical surface (18);

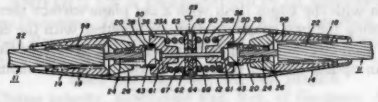
means (26, 32) for securing the terminal (12) in the stepped bore (14), the securing means (26, 32) being adjustable to longitudinally translate the terminal (12) in the stepped bore (14) and to urge the stepped surface (29) of the terminal (12) into a preselected position of support in relation to the stepped surface (22) of the bore (14); and

means (34, 38, 48) for locking the securing means (26, 32) against movement and for maintaining the terminal (12) at the preselected position of support.

4,362,352
SPLICING DEVICE

Ronald G. Hawkins, and Dwain L. DeHart, both of Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 8, 1980, Ser. No. 147,561
Int. Cl.³ H01R *7/06*
U.S. Cl. 339—248 S **6 Claims**



1. An assembly for making a mechanical and/or electrical connection between two conductors and the like, comprising:

a tubular housing having tapered portions converging toward open outer ends of the housing,

unitary, tubular, conductor gripping structures located within said housing, the wall of each structure having an outer tapered surface converging toward the open outer end of the housing, and thin wall portions that form a continuous hoop of material at least adjacent the ends of the structure,

hammers of substantial mass located within the housing, and spaced a predetermined distance from the conductor gripping structure,

at least one coil spring made of relatively large gauge spring material located between and in engagement with the hammers,

rod means extending between and in engagement with the hammers for holding the hammers against the spring and the spring in compression, and

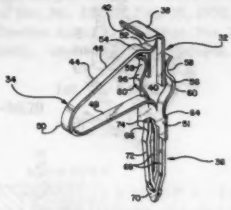
means for releasing the rod such that the hammers and the compression of the spring are released, the hammers and released compression of the spring being effective to drive the hammers the predetermined distance to the conductor gripping structures, and the gripping structures toward the open end of the housing, the tapered portion of the housing being effective to reduce the diameter of the structures by folding the thin wall portions thereof.

4,362,353
CONTACT CLIP FOR CONNECTING A CERAMIC SUBSTRATE TO A PRINTED CIRCUIT BOARD

Robert F. Cobaugh, Elizabethtown, and Norwood C. Graeff, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 27, 1980, Ser. No. 153,514
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—258 P **11 Claims**

1. A contact clip for mounting a substrate to a printed circuit board, said clip comprising, an elongated length of conductive material, its top section being curved around to provide a downwardly facing surface and having a depending first finger, its lower section having a portion adapted for insertion into a hole in a printed circuit board and further having a second finger extending upwardly and slidingly engaging the first finger to provide an electrical signal path therebetween, and its intermediate section formed into an elongated, outwardly projecting nose consisting of an upper limb attached to and extending obliquely downwardly from the top section, a

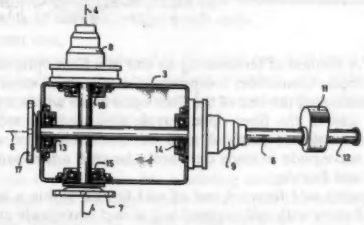


lower limb attached to and extending outwardly from the lower section, and a bight connecting the two limbs, said downwardly facing surface of the top section cooperating with the top surface of the upper limb to provide a receptacle for an edge of a substrate.

4,362,354
TWO-AXIS MOUNTING STRUCTURE FOR A TELESCOPE

Karl-Heinz Hager, Heidenheim, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,392
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932085
Int. Cl.³ G02B *23/16*
U.S. Cl. 350—83 **7 Claims**



2. As an article of manufacture, a two-axis telescope mount, comprising a rigid housing having first and second pairs of opposite side-wall portions, a first-axis shaft journaled in said first pair of side-wall portions and including means external of said housing for fixed-reference mounting of said shaft, a second-axis shaft journaled in the second pair of side-wall portions and including means external of said housing for secure connection to a telescope, said shafts extending within said housing in orthogonally related directions and in close but clearance-offset relation to each other.

4,362,355
OPERATING MICROSCOPE ASSEMBLY

Naoyuki Takahashi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jan. 29, 1981, Ser. No. 229,462
Claims priority, application Japan, Apr. 28, 1980, 55-58679[U]
Int. Cl.³ G02B *21/24*
U.S. Cl. 350—84 **7 Claims**

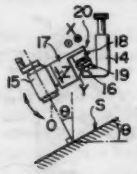
1. A movable microscope assembly, comprising:

a microscope having an optical axis;

support means for supporting said microscope;

tilting means for tilting said optical axis of said microscope;

a translational movement mechanism for translationally moving said microscope in any desired direction in a plane perpendicular to said optical axis of said microscope; and



a focussing mechanism for moving said microscope along said optical axis.

4,362,356

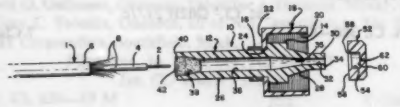
CONCENTRIC OPTIC TERMINATION UTILIZING A FIXTURE

Russell H. Williams, Wormleysburg, Pa., and Robert F. Meeham, Sudbury, Mass., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 940,926, Sep. 11, 1978, abandoned. This application Apr. 22, 1981, Ser. No. 256,351

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 **6 Claims**



1. A method of terminating an end of a fiber optic cable in a fiber optic connector, comprising the sequential steps of:

positioning the end of the fiber optic cable within a passageway of the fiber optic ferrule along with a solidifiable encapsulant material until an exposed end of an optic waveguide extends outwardly beyond a forward end of said ferrule;

placing said forward end of said ferrule within a bore of a fixture with said exposed end of said waveguide extending through a hole in said fixture, said hole being concentric with said bore so that the axis of said exposed end of said waveguide is in coincident alignment with the axis of said ferrule;

solidifying said encapsulant material thereby securing the end of the fiber optic cable in said ferrule;

removing said fixture from said forward end of said ferrule; and polishing said exposed end of said waveguide.

4,362,357

OPTICAL STAR COUPLER FOR MULTI-MODE LIGHT CONDUCTING FIBERS

Michael Stockmann, and Hans-Hermann Witte, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

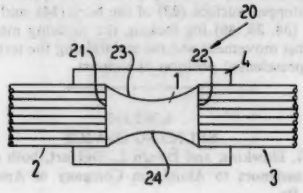
Filed Apr. 2, 1980, Ser. No. 136,423

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2915114

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.16 **6 Claims**

1. A method of forming an optical star coupler for the interconnection of one group of a plurality of multimode light conducting fibers arranged in a single layer on a substrate to a second group of multi-mode light conducting fibers arranged in a single layer on the substrate by a mixing element formed by a planar waveguide having a semi-circular shape, said method comprising the steps of providing a substrate, forming guide means for two separate groups of light conducting fibers on the surface of said substrate, cutting the substrate on a plane into two substrate portions with at least one of the portions having guide means for the two groups, positioning two groups of fibers in a layer of a single thickness on a surface of the one



substrate portion utilizing said guide means, polishing the end of the fibers to the plane of the cut substrate portion, providing a semi-circular waveguide on the surface of the other substrate portion with the edges flush with a cut plane surface thereof, assembling the two substrate portions together with the edges of the semi-circular waveguide engaging the groups of fibers.

2. An optical coupler produced by the method of claim 1.

4,362,358

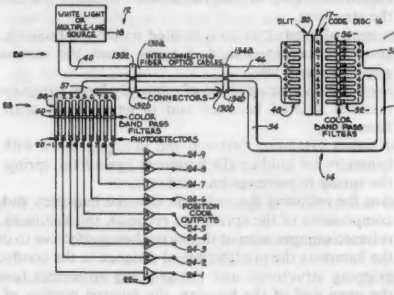
OPTICAL ENCODER HAVING ONLY ONE OR TWO FIBER OPTIC CABLES

Ralph S. Hafle, Benton, Ark., assignor to BEI Electronics, Inc., Little Rock, Ark.

Filed Aug. 13, 1980, Ser. No. 177,832

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.16 **8 Claims**



1. An optical encoder, comprising

a multi-colored light source in an active zone,

first fiber optic means for conducting light from said source to a passive zone,

an optical encoding member in said passive zone and having a plurality of code tracks,

said first fiber optic means having a plurality of branches corresponding to said code tracks for conducting light to said code tracks,

second fiber optic means for conducting light from said passive zone to said active zone,

said second fiber optic means having a plurality of branches corresponding with said code tracks for receiving and combining the light therefrom after modulation by said code tracks,

a plurality of first color filters corresponding with said code tracks for imparting a different color to the light received by said second fiber optic means from each of said code tracks,

a plurality of photodetectors in said active zone and corresponding with said code tracks for producing electrical signals corresponding to the modulated light from said code tracks,

said second fiber optic means having a plurality of photodetector branches in said active zone for conducting portions of the combined light to said photodetectors,

and a plurality of second color filters corresponding with said photodetectors for transmitting light of only one of the different colors to each of said photodetectors whereby each photodetector receives the colored light from only the corresponding code track.

4,362,359

COUPLING DEVICE FOR COUPLING SIGNALS INTO AND OUT OF A TRANSMISSION GLASS-FIBER

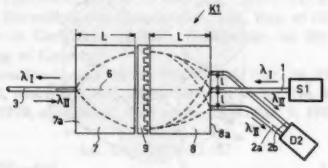
Hans Dammann, Tangstedt, and Ulrich Killat, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,858

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916234

Int. Cl.³ G02B *5/172*

U.S. Cl. 350—96.19 **2 Claims**



1. An optical wavelength-division multiplexing and demultiplexing device comprising:

first and second imaging devices, each of which can convert a point light source into parallel rays and can convert parallel rays into a point light source; and

an optical grating situated between the imaging devices such that parallel rays, produced by the imaging devices from point light sources, will pass through the grating;

CHARACTERIZED IN THAT:

the grating is a binary transparent phase grating with a rectangular groove profile, said grating having a duty factor of 1:1;

the grating has an optical path difference, $H=(n-1)h$, which is substantially given by

$H=n_1\lambda_I$, and

$H=(m_1+\frac{1}{2})\lambda k$

where n_1 and m_1 are positive integers, N is the refractive index of the grating material, h is the grating height and λ_I and λ_k are two optical wavelengths to be multiplexed and demultiplexed; and

the device further comprises a transmission optical fiber having an end located to one side of the grating at a point where light exitting the fiber will be converted, by one of the imaging devices, into parallel rays substantially perpendicular to the grating, light beams of the two optical wavelengths to be multiplexed being simultaneously passed through the optical fiber in opposite directions.

4,362,360

SOCKET FOR A DETACHABLE PLUG AND SOCKET CONNECTION FOR COUPLING AN OPTICAL FIBER AND DETECTOR ARRANGEMENT TO A LIGHT SOURCE

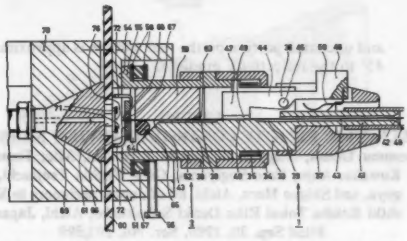
Lothar P. Mannschke, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 13,585, Feb. 21, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,485

Claims priority, application Netherlands, Mar. 1, 1978, 7802231

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **7 Claims**



7. A socket provided with a semiconductor light source, for a detachable plug and socket connection for coupling an optical fiber to the semiconductor light source, comprising:

an intermediate member, having a light source end near the light source and a plug end, said member having a fiber guide therein extending from the light source end to the plug end;

a disc-shaped semiconductor light detector disposed adjacent to the fiber guide at the light source end and having a hole in which the fiber guide ends;

an outer can;

an inner member disposed in the outer can, said inner member including the intermediate member, said outer can comprising mounting means for mounting the socket on a support for the light source; and

adjusting means for positioning the inner member with respect to the light source;

wherein the outer can has a bearing surface and the inner member has a flange which bears upon the bearing surface, the adjusting means being set screws fitted in the outer can and whose ends engage the inner member, said socket further comprising a ring-shaped resilient element spaced between the set screw ends and the flange of the inner member.

4,362,361

COLLIMATED BEAM MANIFOLD WITH THE NUMBER OF OUTPUT BEAMS VARIABLE AT A GIVEN OUTPUT ANGLE

Cecil W. Campbell, and Robert B. Owen, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 15, 1980, Ser. No. 187,106

Int. Cl.³ G02B *27/14*

U.S. Cl. 350—171 **2 Claims**

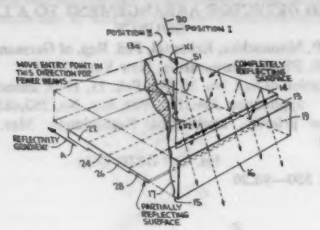
1. An optical manifold comprising:

an optical substrate having front and rear surfaces;

a fully reflecting coating on the rear surface;

a partially reflecting coating on the front surface establishing a reflectivity gradient thereon;

said fully reflective coating partially covers the rear surface, and the dividing line between the fully reflecting coating



and uncoated portion on the rear surface is approximately 45° to the reflectivity gradient.

4,362,362

ELECTRIC REMOTE CONTROL REARVIEW MIRROR

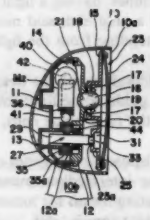
Susumu Usami, Nagoya; Nobuyuki Teranishi, Mie; Tomohisa Kuwako, Anjo; Ikuo Sugiyama, Gifu; Yoshio Tsujiuchi, Nagoya, and Shigeo Hara, Aichi, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Sep. 30, 1980, Ser. No. 192,599

Claims priority, application Japan, Oct. 17, 1979, 54-144090[U]; Oct. 19, 1979, 54-145052[U]

Int. Cl.³ G02B 7/18

U.S. Cl. 350—289 **6 Claims**



1. An electric remote control rearview mirror assembly comprising:

a mirror unit including a mirror support plate and a mirror having a reflective surface and a backside and supported by the mirror support plate with the backside facing thereto;

a support casing positioned on one side of the mirror support plate remote from the mirror;

a spherical mounting member positioned between the mirror unit and the support casing for clamping the mirror support plate thereon for pivotal movement around horizontal and vertical axes;

a pair of sockets defined in the mirror support plate in spaced relation to the spherical mounting member and spaced a predetermined angle from each other with respect to the spherical mounting member;

a pair of elastic rod members formed of elastic material, each said elastic rod member comprising a stem portion, an end fixture portion fitted in a respective said socket, and a neck portion between said stem portion and said fixture portion;

a pair of drive members formed of rigid material and rotatably supported inside said support casing, each said drive member being held in driving engagement with said stem portion of a respective said rod member at a location inside said support casing;

an electric drive means housed inside said support casing for selectively rotating said drive members to axially move said rod members, thereby to pivotally adjust said mirror unit about said spherical mounting member, and thereby to adjust the angular position of said mirror unit with respect to said horizontal and vertical axes;

each said fixture portion and the respective said socket having complementary engaging surface means for preventing relative movement therebetween in any direction during axial movement of the respective said rod member and the resultant pivotal movement of said mirror unit; and

each said neck portion having a diameter smaller than that of the respective said stem portion and an elastic flexibility greater than the elastic flexibility of said stem portion and sufficient to enable said neck portion to bend with respect to the axis of said stem portion upon said pivotal movement of said mirror unit.

4,362,363

POLYGONAL MIRROR WITH TIGHTENED REFLECTING FOIL

Bernardus A. Mulder, Deurne, and Bontko Witteveen, Venlo, both of Netherlands, assignors to OCÉ-Nederland B.V., Venlo, Netherlands

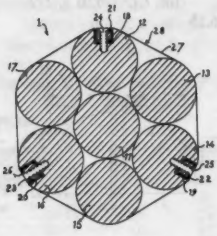
PCT No. PCT/NL79/00009, § 371 Date Jun. 25, 1980, § 102(e) Date Jun. 25, 1980, PCT Pub. No. WO80/01049, PCT Pub. Date May 29, 1980

PCT Filed Nov. 23, 1979, Ser. No. 205,999

Claims priority, application Netherlands, Nov. 27, 1978, 7811599

Int. Cl.³ G02B 7/18, 5/08

U.S. Cl. 350—299 **21 Claims**



1. A polygonal mirror, comprising a plurality of mirror surfaces arranged round an axis of rotation, each of which surfaces is inclined equally to the axis of rotation, characterized in that the mirror comprises a reflecting foil tightened over a plurality of supporting elements arranged round the axis of rotation.

4,362,364

APERTURE STOP ASSEMBLY FOR A LASER BEAM OPTICAL SYSTEM

Albert H. Smith, Tinton Falls, N.J., assignor to Litton Systems, Inc., Melville, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,772

Int. Cl.³ G02F 1/33

U.S. Cl. 350—358 **11 Claims**

1. An aperture stop for use in an optical system, comprising:

a source of cohereent light which forms a light beam;

an acousto-optic modulator through which said light beam is passed;

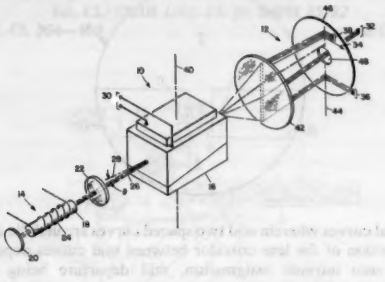
a frequency source connected to said acousto-optic modulator for splitting said coherent light beam into a plurality of beams including a desirable first order beam and a number of undesirable zero order, negative first order and second order beams;

lens means for focusing said plurality of beams upon a focal plane; and

stop plate means having an aperture therein mounted at said focal plane;

said stop plate means aligned to permit sole passage of said desirable first order beam through said aperture;

said stop plate means aligned at an angle to said plurality of beams to absorb said number of undesirable zero order, negative first order and second order beams;



said frequency source being a multi-frequency source which causes said acousto-optic modulator to split said coherent light beam into a plurality of beams including a number of desirable first order beams.

4,362,365

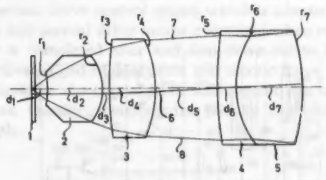
ACHROMATIC MICROSCOPE OBJECTIVE

Karlheinz Esswein, Aalen-Unterkochen, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 97,536, Nov. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 900,694, Apr. 27, 1978, abandoned. This application Mar. 9, 1981, Ser. No. 241,813

Int. Cl.³ G02B *21/02*

U.S. Cl. 350—414 **8 Claims**



1. An achromatic microscope objective with a magnification within the range of 35× and 45× and a numerical aperture greater than 0.60, the complete objective having only four lens elements forming three lens components, the first component, numbering the components consecutively from front to rear, being a single positive element, the second component also being a single positive element, and the third component being a cemented doublet consisting of a front negative element and a rear biconvex positive element, the refractive index n_d and the Abbe number v_d of each element being within the range indicated in the following table:

Element 1	[1.70] 1.63 > n_d > 1.55	[68] 64 > v_d > 56	[45]
Element 2	1.70 > n_d > 1.57 [1.55]	[68] 62 > v_d > 55	[45]
Element 3	[1.97] 1.93 > n_d > 1.75 [1.65]	[40] 29 > v_d > 21	[20]
Element 4	[1.57] 1.53 > n_d > 1.47 [1.46]	85 > v_d > 51	[50]

4,362,366

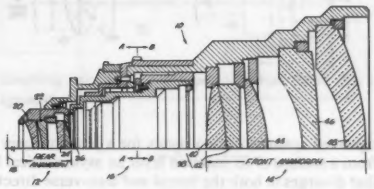
FOCAL LENGTH EXTENDER

Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Filed Jul. 28, 1980, Ser. No. 172,939

Int. Cl.³ G02B *13/08*

U.S. Cl. 350—420 **1 Claim**



1. A lens system having a front portion and a rear portion in which the rear portion is described by the following table:

SURFACE	Radii	Height	Width	Index Of Refraction	Distance
1	+.769	.786	1.000		
				1.620	.100
2	+2.571	.864	"		
					.060
3	+1.176	.872	"		
				1.620	.100
4	+6.994	.976	"		
					.200
5	+6.667	1.000	"		
				1.621	.120
6	+20.000	1.000	"		
				1.620	.120
7	+1.206	1.000	"		

and the front portion is described by the following table:

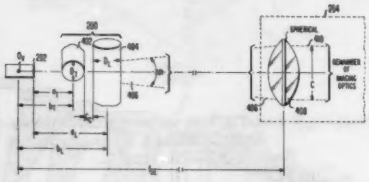
SURFACE	Radii	Width	Height	Diagonal	Index Of Refraction	Distance
A	−9.524	3.330	1.900	3.834		
					1.620	.620
B	+7.143	3.434	2.102	4.026		
					1.621	.400
C	PLANO	3.674	2.230	4.300		
						.250
D	+17.551	3.772	2.364	4.450		
					1.621	.600
E	+4.307	3.888	2.556	4.653		
						1.072
F	+3.571	4.044	3.126	5.111		
					1.620	.500
G	+18.845	4.636	3.286	5.682		
						.800
H	+3.846	4.740	3.712	6.020		
					1.620	.600
I	+8.431	5.946	3.906	7.114		

4,362,367

MINIATURIZED SYMMETRIZATION OPTICS FOR JUNCTION LASER

Jacob M. Hammer, Plainsboro; Charlie J. Kaiser, Trenton, both of N.J., and Clyde C. Neil, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 11, 1980, Ser. No. 167,689
Int. Cl.³ G02B 13/18
U.S. Cl. 350—433 5 Claims



1. Improved symmetrization optics for a junction laser that emits from a surface of its junction layer an asymmetrical light beam that diverges in both the lateral and transverse directions with respect to the junction layer plane of said laser; said symmetrization optics comprising:

first and second cylindrical rods of respective selected given diameters and axial lengths, said diameters being of the order of millimeters or less;

said first rod being situated at a first selected distance from the emitting junction of said laser in the path of the divergent beam therefrom, with the axial length of said first rod being oriented substantially parallel to the lateral dimension of said junction; said selected given diameter and axial length of said first rod, as related to said first selected distance, being sufficient for said first rod to collect at least substantially all the emitted light in said divergent beam, whereby said first rod occupies a first volume of space with respect to said junction laser; said first rod being composed of a material exhibiting a first selected index-of-refraction;

said second rod being situated at a second selected distance, greater than said first selected distance, from the emitting junction of said laser in the path of the divergent output beam from said first rod, with the axial length of said second rod being oriented substantially parallel to the transverse dimention of said junction; said selected given diameter and axial length of said second rod, as related to said second selected distance, being sufficient for said second rod to collect at least substantially all of the light of the beam emerging from said first rod, whereby said second rod occupies a second volume of space with respect to said junction laser; said second rod being composed of a material exhibiting a second selected index-of-refraction; and

wherein the respective selected values of said first and second distances, said first and second indices-of-refraction, and the respective diameters and axial lengths of said first and second rods are such that (1) said first and second volumes of space are mutually exclusive, and (2) said first and second rods cooperate as a lens system to derive a symmetrical cross-section output beam of light from said lens system.

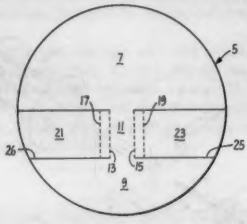
4,362,368

PROGRESSIVE POWER OPHTHALMIC LENS HAVING WIDE TRANSITION CORRIDOR

Raoul F. van Ligten, No. 43 Woodleigh Park, Singapore, 1335, Singapore

Filed May 15, 1980, Ser. No. 150,069
Int. Cl.³ G02C 7/06
U.S. Cl. 351—169 4 Claims

1. A progressive power lens having a top portion for distance viewing and a bottom portion for close-up viewing, said top and bottom portions being connected by at least one corridor of continuously varying power, said power varying from the distance portion to the close-up portion, said corridor being a transition zone defined by at least two spaced generally



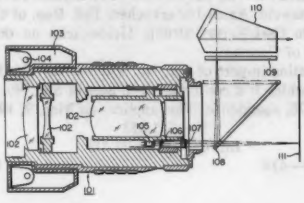
vertical curves wherein said two spaced curves are umbilic and the portion of the lens corridor between said curves departs from zero intrinsic astigmatism, said departure being no greater than 0.50 diopters, said lens having nonumbilic areas horizontally spaced on each side of said corridor.

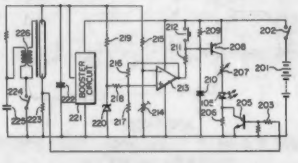
4,362,369

CAMERA HAVING A DATA PHOTOGRAPHING DEVICE

Kazuyuki Kazami, and Nobuyoshi Hagyuda, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,413
Claims priority, application Japan, Oct. 8, 1979, 54/128833
Int. Cl.³ G03B 17/24
U.S. Cl. 354—106 5 Claims





1. In a camera having a flash unit for illuminating an object to be imaged onto a film by a phototaking lens, a movable mirror for directing the light from said phototaking lens to a viewfinder during observation and for directing said light onto the surface of the film during photography and a data photographing device provided in structural association with said phototaking lens, said flash unit including a flash tube and means for detecting the light emission capable condition of said flash tube, said data photographing device including information display means having a light source, and an optical system for imaging onto said film the light beam from said information display means, the improvement comprising:

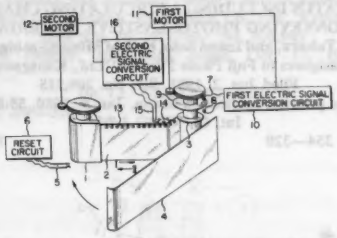
drive means for turning on the light source of said data photographing device in response to the detection of the detecting means of said flash unit; and

means for directing the light from said light source to said mirror so that said light can be observed.

4,362,370
AUTOMATIC FILM TRANSPORT DEVICE

Hiroshi Iwata, Nara, and Tsunemi Yoshino, Ibaraki, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Feb. 18, 1981, Ser. No. 235,750
Claims priority, application Japan, Feb. 26, 1980, 55-23652; Feb. 26, 1980, 55-23653
Int. Cl.³ G03B *1/04, 17/36;* B65H *25/32*
U.S. Cl. 354—173 8 Claims



1. An automatic film transport device characterized by the provision of

(a) a take-up reel for winding thereon a film unrolled from a film case loaded into a camera body,

(b) a first drive means for rotating said take-up reel in one direction,

(c) a film winding condition detection means for detecting the condition of the film being wound on said take-up reel which is driven by said first drive means,

(d) a first drive control means which is adapted to activate said first drive means in response to the action of any suitable part of a camera accomplished prior to the first exposure of the film and deactivate said first drive means in response to the output from said winding condition detection means,

(e) a second drive means for rewinding the film into said film case from said take-up reel,

(f) a film detection means adapted to detect the length of the film rewound into said film case, and

(g) a second drive control means which is adapted to activate said second drive means everytime when one exposure is completed after said first drive means has been deactivated and to deactivate said second drive means in response to the output from said second film detection means, thereby rewinding the film by a predetermined length.

4,362,371
MOTOR DRIVE APPARATUS

Yoshitaka Watanabe, Tokyo, and Tomonori Iwashita, Fuchu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,244
Claims priority, application Japan, Jul. 4, 1980, 55-91464
Int. Cl.³ G03B *1/04*
U.S. Cl. 354—173 14 Claims

1. A motor drive apparatus to be coupled with a camera for winding film, comprising:

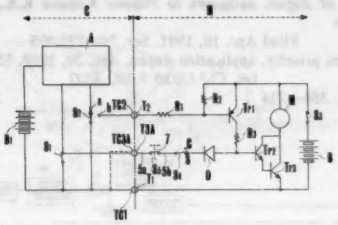
(a) a winding signal terminal;

(b) a grounding terminal;

(c) a mode signal terminal;

(d) a mode signal line connected to said mode signal terminal; and

(e) switching means inserted in said mode signal line connected to said mode signal terminal, said means to render said mode signal line ineffective when the motor drive apparatus is attached to a camera having a mechanical

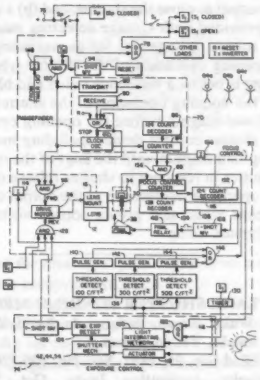


coupling member of a type different from that of the apparatus.

4,362,372
FOCUSING SYSTEM AND METHOD WITH ADJUSTMENT FOR LENS DEPTH OF FOCUS

Kenneth C. Kiesel, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 126,824, Mar. 3, 1980, abandoned. This application Mar. 18, 1981, Ser. No. 244,964
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—195 14 Claims



1. The method of focusing a variable aperture objective lens of a photographic camera having a range finder to determine the distance from the camera to the near part of a subject to be photographed, focus control means for positioning said lens at a focus setting corresponding to the distance determined by said range finder and aperture control means for determining the effective lens aperture value for proper exposure of camera-contained film to said subject, said method comprising the steps of:

generating a signal representative of objective lens depth of focus for the determined lens aperture value to be used; and

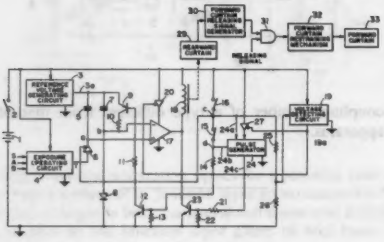
transmitting said signal to said focus control means to effect a focusing adjustment of said lens in accordance wth said determined aperture value to a focus setting corresponding to a distance greater than that determined by said range finder.

4,362,373

SHUTTER CONTROL DEVICE FOR A CAMERA HAVING A SHUTTER RELEASE LOCK DEVICE

Kazuyuki Kazami, Tokyo, and Yoshiaki Ohtsubo, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,995
Claims priority, application Japan, Apr. 30, 1980, 55-56159
Int. Cl.³ G03B 9/08, 7/00
U.S. Cl. 354—234 3 Claims



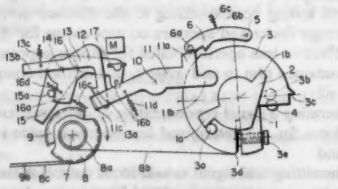
1. A shutter control device for a camera having (a) an automatic exposure time control device provided with a comparator circuit for comparing a time output corresponding to the lapse of time from the opening operation of a shutter with a proper shutter speed output representing a proper shutter speed and for generating a comparison output when said two outputs are in a predetermined relation and a magnet for blocking the closing operation of the shutter by energization, said magnet being adapted to be deenergized in response to said comparison output to close the shutter, and (b) a shutter release lock device provided with voltage detecting means for detecting a power source voltage and for deenergizing said magnet before the opening operation of the shutter when the power source voltage is below a reference value and blocking means for blocking the opening operation of the shutter by the deenergization of said magnet before the opening operation of the shutter, said shutter control device including means for forcibly energizing said magnet until the start of the opening operation of the shutter in response to shutter release operation, said means being operative in response to the output of said voltage detecting means when said power source voltage is greater than said reference value.

4,362,374

FOCAL PLANE SHUTTER WINDING MECHANISM

Haruo Ishii, Wako, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,770
Claims priority, application Japan, Oct. 3, 1980, 55-141101[U]
Int. Cl.³ G03B 9/32
U.S. Cl. 354—242 7 Claims



1. In a focal plane shutter mechanism of the type having a top curtain biased for movement in a shutter curtain running direction and a top curtain drum on which said top curtain is to be wound, a shutter winding mechanism comprising:

a shutter winding plate;

means for rotating said shutter winding plate in a shutter winding direction; and

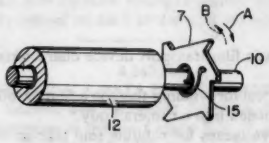
a flexible ribbon coupling said shutter winding plate and said top curtain drum for rotating said top curtain drum to wind said top curtain when said shutter winding plate is rotated in said shutter winding direction.

4,362,375

APPARATUS INCLUDING A CIRCULATING CHAIN FOR CONVEYING PHOTOSENSITIVE MATERIAL

Toshiro Tahara, and Izumi Seto, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1981, Ser. No. 269,215
Claims priority, application Japan, Jun. 9, 1980, 55-80164
Int. Cl.³ G03D 3/08
U.S. Cl. 354—320 7 Claims



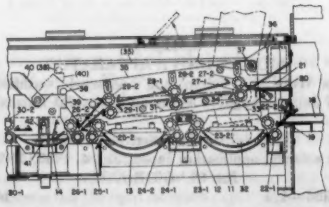
1. In an apparatus for processing photosensitive material including a guide bar to which one end of a photosensitive material is fixed, a circulating chain which carries said guide bar which is grasped by a link plate, and a ratchet wheel which delivers said guide bar between said ratchet wheel and said circulating chain, the improvement comprising said ratchet wheel being mounted on a drive shaft through an elastic material, wherein torque from said drive shaft is elastically transmitted to said ratchet wheel when said guide bar is delivered between said ratchet wheel and said chain.

4,362,376

FILM PROCESSOR WITH A BY-PASS TRANSFERRING MECHANISM

Masami Otani, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed May 11, 1981, Ser. No. 262,398
Claims priority, application Japan, May 22, 1980, 55-71604
Int. Cl.³ G03D 3/08
U.S. Cl. 354—319 6 Claims



1. Apparatus for processing films comprising:

a processing route having a plurality of different processing sections for processing an exposed ordinary film and means for transferring the exposed ordinary film continuously along the processing route from one processing section to the next;

first film inlet means for communicating film inserted therein to said transferring means for transferring film along the entire processing route;

second film inlet means; and

by-pass transferring means for receiving film from said second inlet means and for delivering film to said transferring means for by-passing at least one processing section; wherein film requiring only a single-bath developing treatment and washing is transferred via said by-pass transferring means through only a portion of said processing route.

4,362,377

FILM PROCESSOR WITH AGITATION MEANS

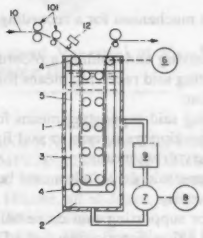
Atsushi Yoshida, and Norimasa Nomura, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Sep. 30, 1981, Ser. No. 306,949

Claims priority, application Japan, Oct. 17, 1980, 55-148904[U]

Int. Cl.³ G03D *3/04, 3/08*

U.S. Cl. 354—320 **5 Claims**



1. A film processor having a film conveying device which conveys exposed film to be processed; a developing tank in which developing solution is supplied, said exposed film being conveyed through the tank; and an agitating device for agitating the developing solution, comprising a film detector for detecting the insertion of film into the developing tank, the detector generating a detecting signal; control means for controlling the said agitating device, the control means operating continuously the agitating device when the detecting signal is received and operating it intermittently when the film is conveyed out of the tank; and switchover means for switching over the said agitating device from the continuous agitation to the intermittent or inversely so that the developing solution is agitated continuously during film is in the tank and intermittently during film is not in it.

4,362,378

PAPER FEED AND IMAGE TRANSFER FOR ELECTROSTATOGRAPHIC COPIERS AND DUPLICATORS

William G. Erskine, Morpeth; Kenneth Moore, Chester le Street; Ronald Purvis, Rowlands Gill; Robert F. Ridley, Newcastle upon Tyne, and Nicholas G. Shreeve, Weybridge, all of England, assignors to Roneo Alcatel Limited, Essex, England

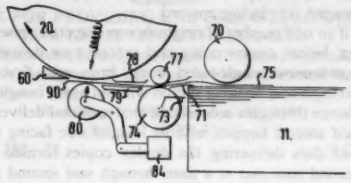
Filed Aug. 12, 1980, Ser. No. 177,342

Claims priority, application United Kingdom, Aug. 21, 1979, 7929020

Int. Cl.³ G03G *15/18*

U.S. Cl. 355—3 TR **6 Claims**

1. Apparatus for electrostatographic reproduction of an original document including an electrostatographic recording member on which may be formed a latent electrostatic image, a rotatable support for the recording member, means for rotating the electrostatographic member and the support, a developing station at which a toner is applied to the recording member, means for supplying copy sheets sequentially to the rotatable support in registration with the latent image, and a transfer station at which the copy sheets pass synchronously with rotation of the support to a transfer roller which defines a nip with said support, said transfer roller being operative to engage the copy sheets in a line contact and to apply an electric field to transfer the developed image from the recording member to the copy sheets, the transfer roller being arranged to operate in timed relationship to the rotation of the support and



the operation of the copy sheet supply means so that charging of the copy sheet begins only after its leading edge has progressed a predetermined distance beyond the line contact between the transfer roller and copy sheet.

4,362,379

APPARATUS SUITABLE FOR PRODUCING DUPLEX COPIES FROM SIMPLEX ORIGINALS

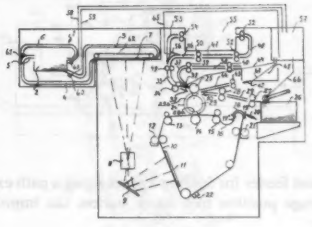
Fredericus J. A. M. Tiek, and Jan B. Stienstra, both of Venlo, Netherlands, assignors to OCE-Nederland B.V., Venlo, Netherlands

Filed May 21, 1981, Ser. No. 266,051

Claims priority, application Netherlands, Jun. 4, 1980, 8003240

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **6 Claims**



6. A method for making duplex copies from a set of simplex originals which comprises:

arranging the originals in a holder in their logical page sequence with the image sides facing upward and the first page of the set on top;

feeding the originals in a first pass thereof one after another from the bottom of the holder to a copying position and thence back into the top of the holder with their image sides facing upward;

in the course of said first pass forming copy images of alternate originals of the set, applying the respective copy images onto copy sheets fed one after another past an imaging station and collecting the resulting single-sided copies with their imaged sides facing upward in a first hopper;

detecting whether an even or an odd number of originals was present in the set of originals fed from the holder in said first pass;

feeding the originals one after another in a second pass thereof from the bottom of the holder to the copying position and thence back into the top of the holder and in the course of this pass forming copy images of the other originals of the set and applying the respective copy images onto the imaged sides of single-sided copies fed one at

a time to said imaging station from the bottom of said first hopper, thus forming duplex copies;

if an even number of originals was detected present in the set, delivering the duplex copies one at a time from said imaging station through a first delivery path that delivers the duplex copies into a second hopper with their last imaged side facing upward;

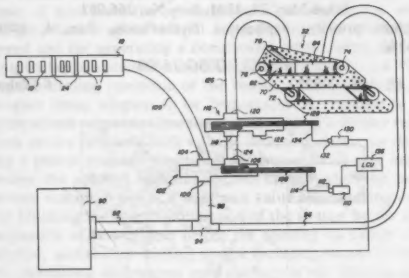
but if an odd number of originals was detected present in the set, before commencing said second pass delivering the bottommost single-sided copy from said first hopper through said imaging station without again imaging it and thence through a second delivery path that delivers it into said second hopper with its imaged side facing upward, and then delivering the duplex copies formed on said second pass one at a time through said second delivery path into said second hopper with their first imaged side facing upward.

4,362,380

DOCUMENT FEEDER WITH VACUUM SYSTEM HAVING TWO CONTROL VALVES IN SERIES

Roger T. Dragstedt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1981, Ser. No. 269,168
Int. Cl.³ G03G *15/00*; B65H *3/12*, *5/02*
U.S. Cl. 355—3 SH 4 Claims



1. In a sheet feeder for feeding a sheet along a path extending from a storage position to a work station, the improvement comprising:

a vacuum blower;

vacuum operated means coupled to said blower and effective to at least partially remove a sheet from the storage position and feed the sheet into the path;

vacuum transport means for receiving a sheet from the vacuum operated means and for advancing the sheet along the path to the work station, the vacuum transport means comprising a vacuum belt located along the path, and first and second vacuum plenums adjacent the belt, the vacuum transport means being operable to apply a first level of vacuum through said first plenum to a sheet as the sheet travels along a first part of the path and to apply a second and lower level of vacuum through said second plenum to a sheet as the sheet travels along a subsequent part of the path, the second plenum being coupled directly to said blower;

a first control valve for regulating the flow of air from said vacuum operated means to said blower, the first valve having an inlet port coupled to said blower, a first outlet port coupled to said vacuum operated means and a second outlet port; and

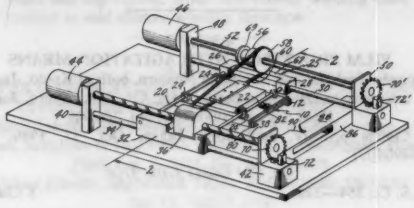
a second control valve for regulating the flow of air from the first plenum to the blower, the second valve having an inlet port coupled to the second outlet port of the first valve and an outlet port coupled to said first plenum.

4,362,381

MULTIFORMAT FILM CASSETTE TRANSPORT

Phillipp J. Quedens, Berlin, Conn., assignor to SmithKline Instruments, Inc., South Windsor, Conn.

Filed Mar. 27, 1980, Ser. No. 134,517
Int. Cl.³ G03B *27/44*
U.S. Cl. 355—54 11 Claims



1. A transport mechanism for a recording medium comprising:

means for receiving and holding a recording medium;

means supporting said receiving means for linear motion in a first direction;

means mounting said supporting means for linear motion in a second direction transverse to said first direction;

a first stationary drive motor;

drive belt means, said drive belt means being affixed to said receiving means;

idler means for supporting said drive belt means at a point displaced in a first direction beyond a first limit of motion of said receiving means, said idler means being mounted from said supporting means for movement therewith;

means for engaging and driving said drive belt means;

a rotatable spline shaft, said spline shaft being driven by said first stationary motor, said drive belt means engaging means being mounted on said spline shaft for rotation therewith, said engaging means also being moveable in said second direction on said spline shaft;

means supporting said spline shaft at points displaced in said second direction beyond the opposite limits of motion of said supporting means in said second direction; and

means including a second stationary motor for imparting motion to said supporting means in the second direction independently of movement of said receiving means in said first direction.

4,362,382

PRECESSION SCANNING SYSTEM

George R. Simpson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 23, 1981, Ser. No. 237,058
Int. Cl.³ G03B *27/70*
U.S. Cl. 355—66 6 Claims

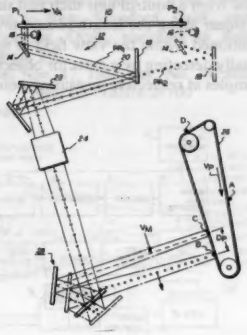
1. An optical system for a copying device wherein a stationary document lying on an object plane is imaged onto a flat photoreceptor, said system comprising:

an illumination scanning means for scanning said document at a scanning speed V_A,

projection means positioned between said scanning means and said photoreceptor moving at a velocity V_B, said projecting means adapted to project reflected images of the document along an optical path towards said photoreceptor, and

a corner mirror assembly positioned along the optical path between said projecting means and said photoreceptor, said assembly adapted to move along a linear path during said scanning operation so as to reflect said projected images, in substantially perpendicular orientation, onto

said photoreceptor, said linear movement causing said reflected images to precess along the surface of the photo-



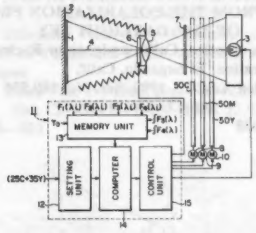
receptor at a speed V_M equal to $V_A - V_P$ and along a precession distance D_P.

4,362,383

METHOD AND AN APPARATUS FOR COLOR COMPENSATION EXPOSURE

Hiroyuki Yonehara, Hikone; Yoshikazu Kimura, Kusatsu, and Kenjiro Tanabe, Hikone, all of Japan, assignors to Dainippon Seizo Kabushiki Kaisha, Japan

Filed May 1, 1980, Ser. No. 145,522
Claims priority, application Japan, May 2, 1979, 54-53506
Int. Cl.³ G03B 27/72
U.S. Cl. 355—71 **3 Claims**



1. A method for color compensation exposure for use in taking photographic pictures in a color duplication process, wherein according to the principle of partial exposure intervals, the exposure is first made with white light followed by exposures using a first maximum index color compensation filter of a color for which the highest level of color compensation is required and then using a second maximum index color compensation filter of another color for which additional color compensation is required so as to obtain the substantially same effect as by fixed color compensation filters selected from a number of color compensating filters with varying densities, the process comprising the steps of;

making a first partial exposure with white light, for a first time interval (T_1);

making a second partial exposure with the first color compensating filter for a second time interval (T_2);

and

making a third partial exposure with the second color compensation filter in combination with the first color compensating filter, for a third time interval (T_3);

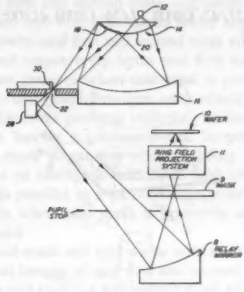
said intervals being determined by designating the indices of the fixed filters which would produce the desired effect of color compensation and carrying out an algorithm which yields the three time intervals (T_1, T_2 and T_3) required for producing the optimum approximation at a plurality of wavelengths.

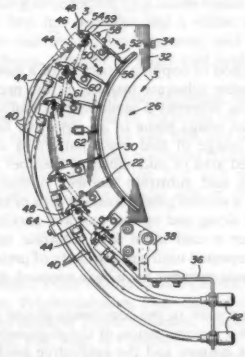
4,362,384

MEANS FOR PROVIDING UNIFORM ILLUMINATION TO A LIGHT SENSITIVE ELEMENT

Orest Engelbrecht, Bethel, and David A. Markle, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 1, 1981, Ser. No. 261,314
Int. Cl.³ G03B 27/72
U.S. Cl. 355—71 **4 Claims**





1. Means for controlling the transmission of light from a light source to a mask for reproducing an image comprising;

a plate member having an elongated curved slit opening disposed between said light source and said element,

a flexible band secured to said plate member and extending along said slit opening, said flexible band disposed perpendicular to said plate member to obstruct light from said light source from passing through said slit opening,

a plurality of sets of adjustment elements connected between spaced areas on said flexible band and said plate member to permit independent flexure of said flexible band at selected points to vary the degree of the slit opening along its length,

said plurality of sets of adjustment elements comprising a plurality of flexible strips secured between said flexible band and a plurality of brackets pivotally mounted to said plate member, a plurality of flexible cables connected to move said brackets and thereby said flexible band, and manual control elements for selectively adjusting said

flexible cables thereby controlling the effective width of said slit opening along the length thereof.

4,362,385

PROCESS AND ARRANGEMENT FOR COPYING MASKS ON A WORKPIECE WITH ARRANGEMENT FOR CORRECTION OF ALIGNMENT ERRORS

Ernst Lobach, Eschen, Liechtenstein, assignor to Censor Patent- und Versuchsanstalt, Vaduz, Liechtenstein

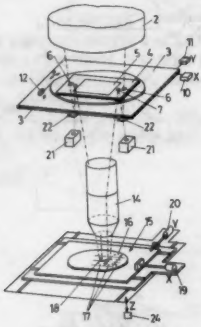
PCT No. PCT/EP80/00007, § 371 Date Oct. 14, 1980, § 102(e) Date Oct. 10, 1980, PCT Pub. No. WO80/01722, PCT Pub. Date Aug. 21, 1980

PCT Filed Feb. 7, 1980, Ser. No. 197,992

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905636

Int. Cl.³ G03B *27/42*; G01B *11/26*; G03B *41/00*; G05B *3/04*

U.S. Cl. 355—77 **10 Claims**



1. In a method of copying a pattern of a mask member upon a semiconductor substrate member in the production of integrated circuits, whereby a semiconductor substrate member is disposed in an image plane of an objective having an optical axis and an image of said mask pattern is cast upon a first predetermined area of said substrate member during an exposure interval, said substrate member is then shifted in said image plane, a second predetermined area of substrate member is positioned along said optical axis and another image of said mask member is cast upon said substrate member, and the sequence is repeated until a multiplicity of predetermined areas of said substrate member have been exposed, the improvement wherein:

(a) initiating prior to the conclusion of one of said exposure intervals a determination of the alignment error between the mask pattern and the respective predetermined area, said determination being carried out at least in part during one of said exposure intervals; and

(b) adjusting the position of one of said members prior to a subsequent exposure to correct the relative positions of said members after the respective shift for said subsequent exposure by a value corresponding to said alignment error.

4,362,386

METHOD AND APPARATUS FOR RECOGNIZING SMEARS

Hajime Matsushita, and Yoshimasa Shimura, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,076

Claims priority, application Japan, Nov. 19, 1979, 54-148912

Int. Cl.³ G01N *33/48*

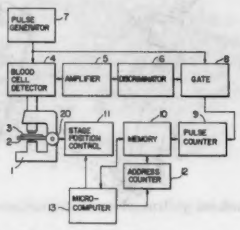
U.S. Cl. 356—39 **10 Claims**

1. A method for recognizing a smear comprising the steps of;

(a) positioning a slide held on a movable stage of a microscope to a predetermined position such that the test smear on said slide is positioned within a view field of said microscope,

(b) moving said stage along said smear in response to an instruction from a control unit such that different areas of said test smear along the length of said smear are sequentially positioned within the view field of said microscope,

(c) sequentially detecting by a detector objects to be counted in test samples at respective measuring points appearing in



the view field of said microscope as said stage is moved, to determine distribution densities of the objects to be counted at the respective measuring points,

(d) comparing the distribution densities at the respective measuring points with a preset distribution density to determine an optimum test area on the test smear, and

(e) moving said stage in response to an instruction from said control unit such that the view field of said microscope is positioned to said optimum test area.

4,362,387

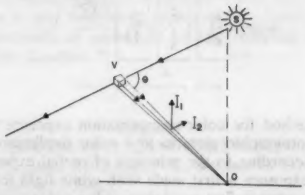
METHOD AND APPARATUS FOR MEASURING VISIBILITY FROM THE POLARIZATION PROPERTIES OF THE DAYLIGHT SKY

Roy Clark, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 22, 1980, Ser. No. 180,536

Int. Cl.³ G01N *21/21*

U.S. Cl. 356—338 **22 Claims**



1. A method for determining visibility of the atmosphere comprising the steps of:

measuring the intensities of two linearly polarized components of scattered daylight, said two components being respectively oriented perpendicular and parallel to a first plane containing the sun, an observation point, and a volume of the atmosphere under investigation,

aligning a light intensity measuring means from said point of observation towards said volume at an observation angle of approximately 90° away from a vertical plane including the sun and said point of observation for measuring the intensities of said two linearly polarized components, and

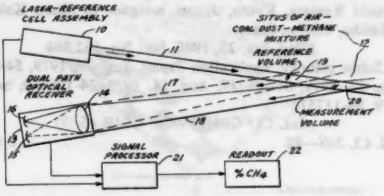
comparing said two intensities to one another, the greater the intensity of the polarized component of daylight perpendicular to said first plane relative to the intensity of the polarized component of daylight parallel to said first plane, the better the visibility of the atmosphere.

4,362,388

REMOTE MEASUREMENT OF CONCENTRATION OF A GAS SPECIE BY RESONANCE ABSORPTION

Walter D. Egan, Bethlehem; Roger T. Boos, Coopersburg, both of Pa.; Robert L. Byer, Stamford, Calif., and Richard K. DeFreez, Beaverton, Oreg., assignors to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Nov. 17, 1980, Ser. No. 207,850
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—341 12 Claims



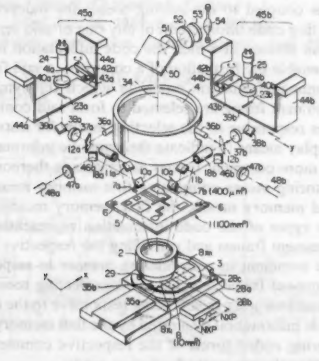
10. In a method of remotely determining the concentration of a specie of gas at a situs comprising, directing a beam of energy along an axis to said situs wherein said energy beam includes a frequency within a resonance absorption band of said specie of gas, detecting said energy by spatially displaced detectors positioned off said axis, measuring the intensities of the energy scattered from two spaced volumes along said beam at said situs with one of said detectors measuring said intensity from a first of said volumes and another of said detectors measuring said intensity from a second of said volumes, and determining the ratio of said intensities, said ratio being a measure of the concentration of said gas specie.

4,362,389

METHOD AND APPARATUS FOR PROJECTION TYPE MASK ALIGNMENT

Mituyoshi Koizumi; Nobuyuki Akiyama, and Yoshimasa Oshima, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,484
Int. Cl.³ G01B *11/27*; H05K *13/00*
U.S. Cl. 356—401 7 Claims



1. A mask alignment method of projection type comprising the steps of:

disposing a wafer in a region onto which a mask is projected by a projection lens, said wafer including first and second wafer alignment patterns formed thereon, said first wafer alignment pattern having at least a first line segment, said first line segment being formed at a first position on said wafer and having a predetermined length in a first direction with first and second step edges extending parallel to one another along said predetermined length, said second wafer alignment pattern having at least another first line segment, said another first line segment being formed at a second position different than said first position on said wafer and having a predetermined length in a second direction approximately perpendicular to said first direction with said first and second step edges extending parallel to one another along said predetermined length, said first and second wafer alignment patterns having respective pattern center axes, said pattern center axes being approximately parallel to said first and second line segments, respectively, said first and second positions being determined so as to cause directions along which each of said pattern center axes lies to intersect with the optical axis of said projection lens;

projecting first and second mask alignment patterns of said mask onto said first and second wafer alignment patterns, respectively, said first and second mask alignment patterns being laid respectively upon said first and second wafer alignment patterns when said mask is projected onto said wafer by said projection lens, each of said first and second mask alignment patterns including at least a second line segment having a predetermined length, said first and second mask alignment patterns being formed at such positions on said mask as to make each of said second line segments parallel to a corresponding one of said first line segments when said mask is correctly aligned with said wafer; and

aligning said mask and said wafer with each other by the use of optical images of said first and second wafer alignment patterns and said first and second mask alignment patterns, said optical images being formed and converted into video signals, a relative displacement between each of said first line segments and a corresponding one of said second line segments being determined by a video signal corresponding to said first line segment and a video signal corresponding to said second line segment, said relative displacement being reduced to align said wafer with said mask,

wherein, during the course of said adjusting, equal amounts of said projected light will be reflected off the first and second step edges of each of said first and second wafer alignment patterns due to the positional relationship of the longitudinal center axes of the first and second wafer alignment patterns to the optical axis of the projection lens.

4,362,390

DRIVE ASSEMBLY FOR VEHICULAR CEMENT MIXERS

Manfred Fischer, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,921
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931969
Int. Cl.³ B28C *5/20*
U.S. Cl. 366—61 13 Claims

1. A cement mixer comprising:

a frame;

a cement-mixing drum rotatably mounted on said frame;

tapping means on said frame for extracting cement mixture from said drum;

loading means on said frame for conveying raw materials into said drum;

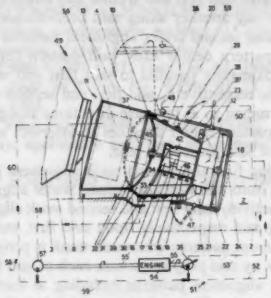
a drive housing attached to said frame and provided with a first chamber having in an upper region an overflow outlet, said housing having a second chamber defined in part by an outer housing wall provided with a plurality of outwardly extending cooling fins, said second chamber communicating with said first chamber via said outlet and including a lower portion forming a sump;

a hydrostatic motor disposed in said first chamber;

transmission means in said housing connected to said motor

and to said drum for transmitting rotary power thereto from said motor;

fluid-circulating means including a hydraulic drive on said frame for energizing said motor, said fluid-circulating means being connected to said second chamber for drawing cooled



fluid from said sump and utilizing the cooled fluid to drive said motor; and

fan means operatively connected to said motor and mounted on said housing for blowing air past said fins upon operation of said motor.

4,362,391

WATCH WITH A CALENDAR DISPLAY AND HAND SETTING DEVICE ACTUATED BY A SETTING SHAFT

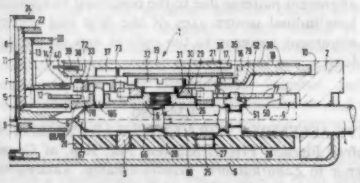
Josef King, and Wolfgang Ganter, both of Schramberg, Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 208,017

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947400

Int. Cl.³ G04B *19/24*; G04C *17/00*

U.S. Cl. 368—34 **14 Claims**



1. A watch with a calendar display and a hands setting device, comprising a setting shaft having a plurality of axial positions, the calendar display and the hands setting device being selectively coupled for rotation with the setting shaft as a function of the instantaneous axial position of said setting shaft, the setting shaft is drivingly connected during the transition from a first preselection axial position into a second calendar correction axial position through a reversing lever with a coupling element that may be rotated into one of two preselectable working position, the setting shaft is rotatably connected in the first preselection axial position with the coupling element to move the coupling element to one of two preparatory positions for the two working positions dependent upon the direction of rotation of the setting shaft, the setting shaft being rotatably disengaged from the calendar display in the first axial position, a slotted link acting on the coupling element during movement of the shaft from the first to the second axial position to urge the coupling element into the preselected working position in engagement with either a date display disk or a day-of-the-week display disk, a third axial position of the setting shaft for the setting of the hands, the coupling element being returned by the slotted link into an intermediate position and held between the two preparatory positions in the third axial position, and the setting shaft being rotatably connected with the minute hand in the third axial position through a hand setting wheel displaceable along an axis of the wheel in a direction transverse to a longitudinal axis of the setting shaft.

4,362,392

ELECTRONIC TIMEPIECE WITH MESSAGE AND/OR ALARM OUTPUT CAPABILITY

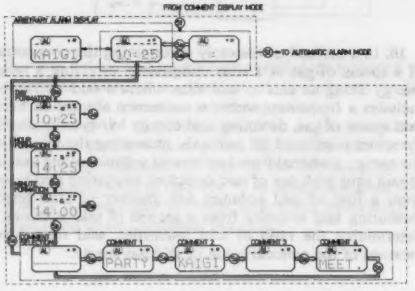
Kiyoshi Kumata, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 25, 1980, Ser. No. 162,884

Claims priority, application Japan, Jun. 29, 1979, 54-83157; Aug. 20, 1979, 54-106217; Aug. 24, 1979, 54-108490; Sep. 12, 1979, 54-117516

Int. Cl.³ G04C *19/00*; G04B *45/00*

U.S. Cl. 368—82 **3 Claims**



1. An electronic timepiece comprising:

means for providing horological information representative of current time information;

display means responsive to the providing means for indicating a visual display of the horological information;

means for storing a plurality of types of code information representing separate comment frames of symbolic information;

means coupled to the storing means for independently selecting code information of any one of said separate comment frames, in which the code information is generated to enable the formation of a comment in said frame, and a comment formation mode, in which the symbols in the comment frame are selected to form said comment;

means responsive to the selecting means for instructing said display means to indicate the symbolic information of one or more comment frames as a message thereon;

the storing means comprising first memory means and second memory means, the first memory means containing the types of the code information representing separate comment frames and providing the respective symbols of the comment in a circulating manner in response to the comment frame selected by the selecting means, and the second memory means being responsive to the types of the code information generated by the first memory means for storing coded forms of the respective comments formed during the comment formation mode;

means responsive to the instructing means for extracting the coded forms of the respective comments from the second memory means;

means responsive to the extracting means for converting the coded forms of the respective comments into the symbolic information comprising the comments; and

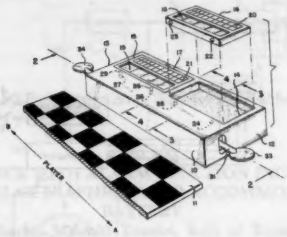
said display means being responsive to the converting means for displaying the symbolic information as the message thereon.

4,362,393

CHESS CLOCK

Pierre L. Tissot, 863 Via de la Paz, Pacific Palisades, Calif. 90272

Filed Nov. 17, 1980, Ser. No. 207,687
Int. Cl.³ G04F 3/00
U.S. Cl. 368—96 5 Claims



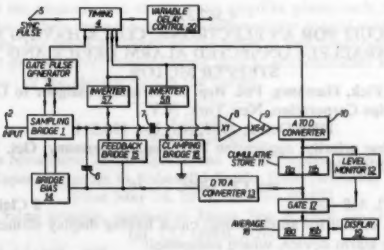
1. A chess clock, including, in combination: an electronic, portable pocket calculator including means, when actuated, for automatically repeating the previously performed function of the calculator, an equal/repeat key for actuating said means and first and second spaced accessible contacts exposed on a surface portion of said calculator, wired in parallel with said equal/repeat key so that momentary short circuiting of said contacts effects the same function in said calculator as pressing and releasing said equal/repeat key; additional first and second spaced contacts for engagement with said first mentioned first and second spaced contacts respectively; a control circuit for short-circuiting said additional first and second spaced contacts at a given repetition frequency; and switch means for connecting when closed and disconnecting when opened said control circuit to said additional first and second spaced contacts whereby said calculator and control circuit constitute a countdown device during a period defined by the lengths of time said switch means is closed.

4,362,394

TIME INTERVAL MEASUREMENT ARRANGEMENT

Robert P. Menlove, Aberdeen, Scotland, assignor to Marconi Instruments Limited, Chelmsford, England

Filed Jul. 28, 1981, Ser. No. 287,586
Claims priority, application United Kingdom, Sep. 30, 1980, 8031492
Int. Cl.³ G04F 8/00; G01R 23/16
U.S. Cl. 368—118 6 Claims



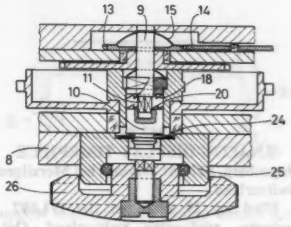
1. A time interval measurement arrangement including means for receiving a signal having a repetitively recurring waveform; means for determining the amplitude of the waveform at a selected point on the waveform by repetitively sampling the signal at said selected point so as to progressively alter in incremental steps the sample value to bring it into agreement with the value of the signal at said selected point; means for varying the sampling instant so as to alter said selected point until the measured amplitude agrees with a predetermined amplitude condition; and means for determining the sampling instant when said agreement is obtained.

4,362,395

DEVICE FOR WINDING AND SETTING A TIMEPIECE

Vincent Calabrese, Lausanne, Switzerland, assignor to Corum, Ries, Bannwart & Co., Switzerland

Filed Oct. 10, 1980, Ser. No. 196,120
Claims priority, application Switzerland, Oct. 19, 1979, 9400/79
Int. Cl.³ G04B 27/00
U.S. Cl. 368—146 8 Claims



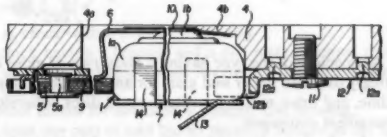
1. A winding and setting assembly for a timepiece comprising a spring drum with a hollow shaft, a rachet secured to said shaft and a setting wheel for the timepiece, a connecting member in said hollow shaft and fixed for rotation therewith, a rotatable and axially movable two-part stem extending through said hollow shaft and comprising a first part which extends freely through said connecting member and carries a pinion engageable with said setting wheel in one axial position of said stem to set said timepiece, and a second part carrying driving means engageable with cooperating driving means on said connecting member in another axial position of said stem to rotate said shaft and thereby wind said timepiece.

4,362,396

BATTERY HOLDER FOR ELECTRONIC WRIST WATCH

Friedrich Perrot, Lengnau, Switzerland, assignor to ETA A.G. Ebauches-Fabrik, Soleure, Switzerland

Filed Aug. 4, 1980, Ser. No. 174,798
Claims priority, application Switzerland, Aug. 21, 1979, 7629/79
Int. Cl.³ B32B 00/00
U.S. Cl. 368—203 8 Claims



1. An electronic watch comprising:
a case body;
a back removably secured to said case body;
a watch movement frame part secured within said case body;
a lodging in said frame part for receiving a battery, the bottom of said lodging being defined by a holding portion integral with said frame part;
a flat cylindrical battery engaging said lodging and having a sidewall;
said battery haing a first pole connected to said sidewall;

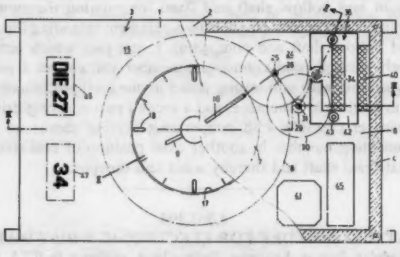
a cover connected to a second pole of said battery;
a flat wall opposed to said cover;
first and second spring contacts secured with respect to said frame part, said first contact engaging said cover to be in electrical contact with said second pole, said second contact engaging said sidewall to be in electrical contact with said first pole; and
a separate bracket means fitted onto said battery and having a resilient protruding tongue which bears against said back, said bracket means pressing said battery against said holding position, whereby said battery is axially held within said watch through said bracket means, which is independent of said spring contacts.

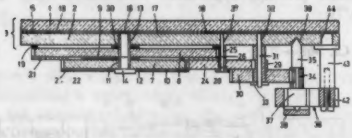
4,362,397

ANALOG-DISPLAY TIMEPIECE

Hans U. Klingenberg, 3274 St. Niklaus bei Merzligen (Canton of Berne), Switzerland

Filed Sep. 29, 1980, Ser. No. 191,497
Claims priority, application Switzerland, Oct. 9, 1979, 9079/79
Int. Cl.³ G04B *19/20*
U.S. Cl. 368—233 **7 Claims**





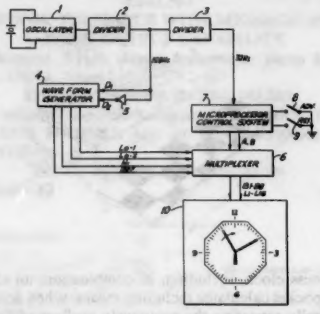
1. A timepiece of the type having a glass, two or more discs rotatingly disposed under said glass for analogically indicating the time, and drive means for rotating said discs, wherein the improvement comprises:
an arbor having a first end rigidly secured to the underside of said glass, a second end of said arbor being remote from said glass and remaining free, and said discs being pivoted about said arbor, and
a retaining member affixed to said second end of said arbor for preventing detachment of said discs from said arbor, said drive means comprising a plurality of gear wheels and pinions and a plurality of arbors about which said gear wheels and pinions are respectively pivoted, each of said plurality of arbors having a first end secured to or in said glass whereby sole support for said drive means is derived from said glass.

4,362,398

MULTIPLEXED LCD ANALOG TIMEPIECE

Michael Jackson, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Oct. 14, 1980, Ser. No. 197,060
Int. Cl.³ G04C *17/02*
U.S. Cl. 368—240 **10 Claims**



1. An LCD analog timepiece comprising
(a) a time base including a quartz oscillator and countdown divider chain providing timekeeping pulses of a first frequency and display driving pulses of a second frequency,
(b) a liquid crystal analog display comprising a plurality of backplane electrodes on one substrate and a plurality of radial electrodes on the other substrate connected in strings, whereby each string of radial electrodes traverses all of the backplane electrodes,
(c) a waveform generator connected to receive said second frequency pulses and providing four output waveforms, one pair of which when combined will activate opposed electrodes in said liquid crystal display and any other combination of which will not activate the display electrodes,
(d) a multiplexer connected to receive the plurality of waveforms and to sequentially supply selected waveform combinations to the display backplanes and radial sets in pairs, and
(e) timekeeping and control means for counting the first frequency pulses and activating the multiplexer so as to sequentially apply selected activating combinations of waveforms to display electrodes causing the radial segments to display the time.

4,362,399

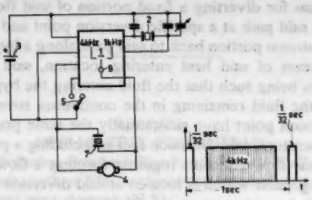
CIRCUIT FOR AN ELECTRONIC CLOCK HAVING A PARALLEL-CONNECTED ALARM DEVICE AND STEPPER MOTOR

Franz Fick, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,211
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941388
Int. Cl.³ G04C *21/16*
U.S. Cl. 368—255 **2 Claims**

1. A circuit for an electronic clock having display elements and an alarm device, which comprises:
a quartz oscillator;
a stepper motor for driving the display elements;
a PXE alarm element connected in parallel with said stepper motor;
a frequency divider having its input coupled to said quartz oscillator and its output coupled to the parallel combination of said stepper motor and said alarm element; and
means for switching the output frequency of said divider

from a first frequency for providing stepping pulses to said motor to a second frequency for driving said parallel-connected PXE element during the time interval between said stepping pulses.



4,362,400

TIMEPIECE WITH ALARM FUNCTION INCLUDING ANNULAR DIAPHRAGM TO ACCOMMODATE BATTERY

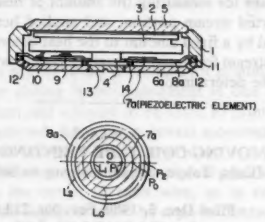
Takahiko Ihochi; Masashi Tanaka, both of Koganei; Kazuo Kojima, Tokorozawa, and Yutaka Nakajima, Mitaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 199,975

Claims priority, application Japan, Oct. 24, 1979, 54-136403

Int. Cl.³ G04C *21/16*

U.S. Cl. 368—255 **7 Claims**



1. A timepiece comprising a casing having a transparent viewing surface; a display unit mounted adjacent said transparent viewing surface; a diaphragm having its peripheral portion carried by the casing and serving to generate sound; a piezoelectric element mounted on the diaphragm; and a module arranged to be powered by an electric cell for driving at least one of the display unit and the piezoelectric element; the display unit, the diaphragm, the piezoelectric element and the module being mounted in said casing with said diaphragm being disposed on the opposite side of said module and said display unit from said viewing surface; wherein the diaphragm and the piezoelectric element are ring-like plates each having holes at their centers which are substantially coaxial with each other, the space provided by the holes in said diaphragm and said piezoelectric element being used to accommodate at least a part of the electric cell in the casing.

4,362,401

WATCHCASE

Gen Mitamura; Takao Eguchi, and Yukio Nagami, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

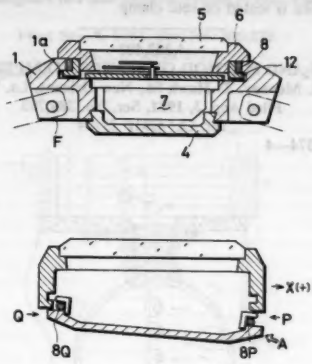
Filed May 24, 1979, Ser. No. 42,131

Claims priority, application Japan, Sep. 8, 1978, 53-110881

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—309 **16 Claims**

1. A watchcase comprising: a case body having oppositely disposed internal recesses therein; a back cover; a support member fixedly connected to said back cover, said support member having an outwardly extending flange extending an outward radial direction of the watchcase from the upper end surface of the support member and having at least a pair of peripheral beads extending further outwardly from said flange and engageable with respective ones of said recesses; means defining clearances between the flange peripheral beads and the case body recesses to permit sufficient movement of the back cover relative to the case body in a diametrical direction of the watchcase to enable removal of the back cover from the case body without causing deformation of the case body, back cover or support member; and biasing means for resiliently biasing the back cover to a balanced position in which the flange peripheral beads engage with respective ones of the case body recesses to thereby removably join said back cover to said case body.



4,362,402

CLOCK WITH A HOLDER

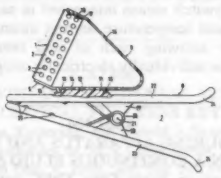
Manfred Kallinke, Hofheim-Wallau; Walter Bleuel, Hofheim; Wolfgang Hoehn, Liederbach, and Kurt Heinrich, Usingen, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 167,886

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929373

Int. Cl.³ G04B *37/00*; A47F *7/00*

U.S. Cl. 368—317 **13 Claims**



1. A clock with a holder comprising

a clock having a housing and a dial plate mounted therein, said housing being square in cross-section in the plane of the dial plate,

holder means for detachably holding said housing,

at least one part of said holder means is formed in the shape of a yoke having two resilient arms,

said housing is clampingly insertable between said arms,

at least side surfaces of said housing and at least free ends of said arms being formed with interlocking profile means for a snap-in connection of said housing and said holder means,

said profile means are calotte-shaped, and said profile means comprise calotte-shaped depressions in at least said side surfaces of said housing and calotte-shaped elevations in at least said free ends of said arms,

said yoke is formed in a V-shape with the ends of said arms parallel to each other,

the width of the ends of said arms is approximately equal to the depth of said housing,

a part of said holder means is formed in the shape of a clamp with two clamping jaws which are movable relative to each other,

said yoke is seated on said clamp.

4,362,403

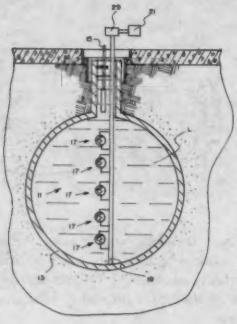
MEANS AND METHOD OF SENSING TEMPERATURE

Joseph R. Mooney, 33 Hawk St., New Orleans, La. 70124

Filed Aug. 3, 1981, Ser. No. 289,793

Int. Cl.³ G01F *23/24*

U.S. Cl. 374—4 **6 Claims**



1. An improved temperature sensing apparatus for sensing temperature in a system for detecting leaks in a liquid storage reservoir of the type including an apparatus for indicating the level of liquid in the reservoir and a temperature sensing apparatus for indicating the temperature of the liquid in the reservoir, said improved temperature sensing apparatus comprising:

(a) a plurality of temperature sensing means for placement at a plurality of locations within the liquid and for displaying measurable electrical characteristics responsive to the temperature of the liquid;

(b) a sensitive electrical meter means for indicating minute electrical characteristics;

(c) an electric circuit for electrically coupling said temperature sensing means and said meter means; and

(d) selector switch means interposed in said electric circuit between said temperature sensing means and said motor means for allowing each of said temperature sensing means to be individually electrically coupled to said meter means.

4,362,404

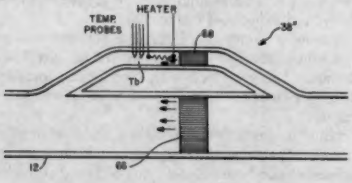
HEAT MEASURING APPARATUS AND METHOD FOR USE IN A CONTINUOUS FLUID STREAM

Peter R. Armstrong, Santa Cruz, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 17, 1980, Ser. No. 131,028

Int. Cl.³ G01K *17/08*

U.S. Cl. 374—39 **4 Claims**



1. An apparatus for use in measuring the amount of heat entering a continuous fluid stream at a predetermined location along the path of said stream from a heat generating system, said apparatus comprising:

(a) means for diverting a fixed portion of said fluid stream from said path at a specific diversion point and returning said stream portion back to said path along a bypass route upstream of said heat entering location, said diverting means being such that the fluid entering the bypass route and the fluid remaining in the continuous stream at said diversion point have substantially the same pressure and temperature, said diversion means including a plurality of laminar flow elements together forming a flow dividing arrangement which is located at said diversion point and which has a bypass section through which the diverted portion of said stream passes and a main section through which the rest of said stream passes;

(b) means for applying heat to said diverted stream portion at a fixed point along said bypass route;

(c) a heat control arrangement including

(i) means for detecting the difference in temperature between the continuous stream at a fixed point on said path downstream of said heat entering location and the diverted stream portion at a fixed point along said bypass route downstream of said heat applying point, and

(ii) means responsive to the temperature difference detected for controlling the amount of said heat applied to said diverted stream portion so as to substantially eliminate said difference; and

(d) means for measuring the amount of heat applied to said diverted stream portion, said applied heat being proportional by a fixed amount to the heat entering said continuous stream from said generating system whereby the latter can be determined.

4,362,405

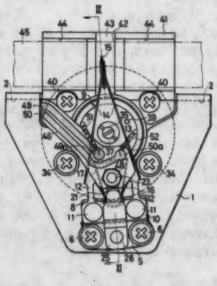
MOVING COIL TYPE PRINTING HEAD

Yoshiaki Ikeda, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Dec. 5, 1980, Ser. No. 213,660

Int. Cl.³ B41J *3/02, 3/08*

U.S. Cl. 400—121 **14 Claims**



1. A moving coil type printing head comprising: a cantilevered printing lever comprised of a leaf spring and having at a free end thereof a printing element opposing a platen; a movable coil secured to said printing lever for movement therewith; magnetic flux generating means for producing a magnetic flux which intersects said movable coil to effect movement of the coil; said printing lever having a base portion supported by a holding member, two resilient leg portions integrally extending from said base portion, a triangular lever portion integral with said leg portions and carrying said movable coil, and a tongue portion integrally extending from the base of said lever portion toward said base portion; and a fulcrum member attached to one of said tongue portion and a plate member mounted on said holding member so as to be in

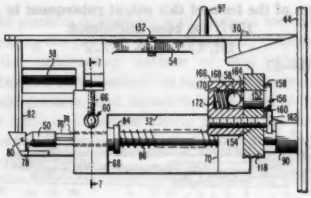
contact with the other of said tongue portion and said plate member.

4,362,406

DOT MATRIX PRINT HEAD

John M. Choberka, Pompano Beach, and Donald K. Rex, Highland Beach, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 62,257, Jul. 30, 1979, abandoned. This application May 14, 1981, Ser. No. 263,524
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 3 Claims



1. A dot matrix printer tilting print head for printing dots on a record medium during lateral movement in one direction across said medium and adapted to be tilted to print dots between the first printed dots during lateral movement in the opposite direction, said print head comprising:

a print head housing containing a plurality of actuatable print wires, the center of each wire, at its end, being separated from adjacent wires by a given distance;

a frame for holding said print head and adapted to be moved laterally across said medium;

means for rotating said housing with respect to said frame about an axis of rotation through said housing, said rotation being by an amount which moves the ends of said wires less than said given distance;

a cylindrical pivot post extending from each side of said housing at a position through said axis of rotation;

pivot receiving means for each pivot post, said pivot receiving means having a concave angular shape end and being affixed to said frame, each pivot post being positioned against an associated pivot receiving means; and

spring means for and associated with each pivot post for maintaining the associated pivot post positioned against the pivot receiving means end;

wherein said spring means includes a spring housing and a spring, said housing having a first opening into which the associated pivot post is positioned and a second opening, crossing said first opening, said pivot post being inserted in said first opening and said spring under compression and said pivot receiving means being inserted in said second opening on opposite sides of said pivot post;

wherein said first opening is slotted and said second opening is circular;

wherein said pivot receiving means and said spring housing are affixed to said frame means by common means;

wherein said pivot receiving means includes post means having said angular shaped end on one side and a head with an indented section, and

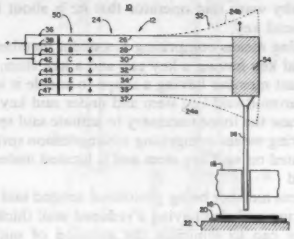
wherein said common means is bolt means for affixing said spring housing to said frame, and head of said bolt means fitting over said indented section of said pivot receiving means to affix said pivot receiving means to said frame.

4,362,407

PIEZOELECTRIC PRINTER AND PIEZOELECTRIC MULTILAM ACTUATOR USED THEREIN

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

Filed Sep. 8, 1981, Ser. No. 300,025
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 21 Claims



1. A piezoelectric printer comprising:

a frame;

a plurality of printer units mounted on said frame; each unit including:

a piezoelectric multilam including at least two piezoelectric members and having a mounting portion and an actuating portion; said actuating portion being movable in an actuating direction and a cocking direction; said multilam being tapered in its lateral dimension, being larger at the mounting portion and smaller at the actuating portion; a weight carried by said multilam for increasing the energy transfer of said multilam; and a printing element driven by said actuating portion;

means for applying a cocking voltage and an actuating voltage to said members which voltages are less than the rupture voltage in the poling direction and less than the depoling voltage in the depoling direction for cocking and actuating said multilam to drive said printing element to the printing position; and

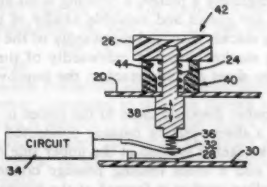
guide means attached to said frame for guiding said printing elements.

4,362,408

MEANS FOR AVOIDING ACCIDENTAL ACTUATION OF A CRITICAL FUNCTION KEY

Richard E. Cordes, Kettering, and Ronald J. Sears, Middletown, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 1, 1980, Ser. No. 211,598
Int. Cl.³ B41J 5/26
U.S. Cl. 400—481 1 Claim



1. A keyboard having a plurality of keys thereon, with each said key being moveable from a rest position along an actuation path having a makepoint therealong, whereby completion of an electrical circuit is effected by moving a said key with

predetermined force along its actuation path to its associated said makepoint;

each said key having means for restoring it towards its said rest position;

at least one of said keys being designated as a special key and also having warning means associated therewith and positioned with respect to said special key and keyboard to increase the force above said predetermined force required to actuate said special key, said increase in force providing tactile feedback to an operator of said keyboard before said special key's associated makepoint is reached to thereby warn said operator that he is about to actuate said special key;

said warning means comprising a resilient member;

said special key having a key cap and a key stem; and

said resilient member having a shape to enable it to be positioned around said key stem and under said key cap so as to increase the force necessary to actuate said special key;

said restoring means comprising a compression spring which is mounted on said key stem and is located under said key cap; and

said resilient member being positioned around said compression spring and also having a reduced wall thickness near said key cap to minimize the abrasion of said resilient member by said compression spring during actuation of said special key.

4,362,409

AUTOMATIC SHEET FEEDING SYSTEM OF A PRINTING APPARATUS

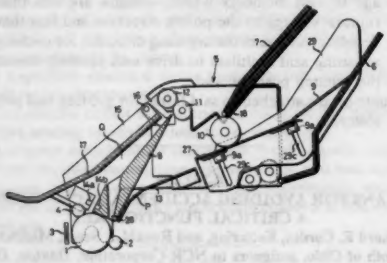
Kazuhiro Endo, Atsugi; Toshiyuki Soejima, Yamato, and Masahiro Fujihara, Kofu, all of Japan, assignors to Ricoh Co., Ltd. and Nipponseimitsu Kogyo Kabushiki Kaisha, both of, Japan

Filed Jul. 28, 1980, Ser. No. 172,958

Claims priority, application Japan, Sep. 11, 1979, 54-115723

Int. Cl.³ B41J *11/58*; B65H *9/04*

U.S. Cl. 400—625 **11 Claims**



1. In an automatic sheet feeding system of a printing apparatus for feeding sheets of a stack one after another, the printing apparatus comprising a platen, a printing head arranged on a front side of the platen and movable axially of the platen, a sheet ejecting stacker disposed rearwardly of the platen and a sheet feeding stacker disposed rearwardly of the platen and underlying the sheet ejecting stacker, the improvement comprising:

a guide member disposed close to the platen in such a manner that a sheet ejecting passage connected to the sheet ejecting stacker is formed at the upper side of said guide member and a sheet feeding passage connected to the sheet feeding stacker is formed at the lower side of said guide member, said guide member having a slit therein for receiving manually inserted sheets, said slit having an inlet end intermediate the upper and lower side of said guide member and an outlet end adjacent the lower side of said guide member;

a sheet feeding roller;

a motor for driving said sheet feeding roller for feeding one sheet after another from the sheet feeding stacker;

a pinch roller cooperating with the platen for feeding the sheet therebetween; and

a transmission means for transmitting rotation from a drive of the printing apparatus to the platen, so that rotation of the platen is initiated only after the leading edge of a sheet fed by the sheet feeding roller has butted against a holding section formed between the platen which remains stationary and the pinch roller.

4,362,410

MECHANICAL PENCIL

Yasuyuki Hashimoto, Nishinomiya, Japan, assignor to Ancos Co., Ltd., Osaka, Japan

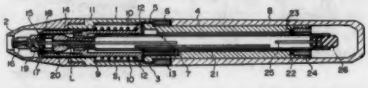
Filed May 23, 1980, Ser. No. 152,958

Claims priority, application Japan, Apr. 21, 1980, 55/53196[U]

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.³ B43K *21/22*

U.S. Cl. 401—67 **7 Claims**



1. A rotational slide type mechanical pencil comprising: a hollow axial body composed of first and second bodies, said first and second bodies being rotatable relative to each other; a lead case for storage of extra leads disposed within and fixed to said hollow axial body; a chuck for firmly clamping a lead during writing, said chuck being rigidly coupled to said lead case; a chuck tightening member having a chuck receiving portion for engaging and tightening said chuck, said tightening member being disposed in said first axial body; slider means for frictionally gripping said lead, said slider means being movable back and forth through a predetermined distance within said axial body and said slider means being disposed in front of said chuck; and a conversion mechanism for converting rotational movement of said second axial body to linear movement of said chuck tightening member whereby rotational movement of said second axial body relative to said first axial body moves said slider means forwardly extending a portion of said slider means from a front opening of said axial hollow body, wherein said hollow body is provided with a hollow space in which said chuck tightening member is movable between a first position and a second position, said chuck tightening member being biased towards said first position, a hollow cylindrical sleeve being provided extending forwardly from a front end of said chuck tightening member, said hollow cylindrical sleeve frictionally retaining said slider means in a front portion thereof, said chuck in said first position being disengaged from said chuck tightening member and said chuck in said second position being engaged with said chuck tightening member, and in said second position, said slider means being fully retractable into said hollow body upon said lead being worn during writing.

4,362,411

DEVICE FOR PROVING A FRICTION JOINT

Sture L. Asberg, Partille, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Oct. 19, 1979, Ser. No. 86,415

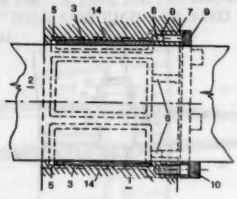
Claims priority, application Sweden, Jan. 10, 1979, 7900207

Int. Cl.³ F16B *00/00*

U.S. Cl. 403—5 **9 Claims**

1. Means providing a friction joint between a pair of members having confronting surfaces comprising a plurality of

spaced pockets in the confronting surface of one of said members arranged in an annular pattern, an element mounted in each of said pockets, means for independently pressurizing by a fluid pressure medium each of said pockets to thereby actuate the said elements into pressure applying relation with the surface of the other member which they confront and means for selectively relieving independently the pressure in each



pocket, said pockets defined by wall portions including radial walls separating the pockets circumferentially disposed closely adjacent the confronting surface of said other member whereby forces are transmitted via said elements and said walls defining said pockets, said elements bring rigid members and seal means made of a resilient elastic material surrounding the periphery of each element and contacting said elements and the walls of said pocket.

4,362,412

COUPLING FOR REMOVABLY CONNECTING A ROD TO A DRIVING SHAFT

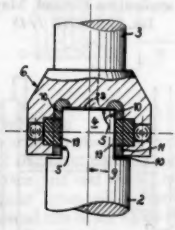
Wolfgang Kunz, Lörrach-Hauingen, Fed. Rep. of Germany, assignor to Firma Kunz Maschinen-U. Apparatebau GmbH, Lörrach-Hauingen, Fed. Rep. of Germany

Filed Aug. 12, 1980, Ser. No. 178,705

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932895

Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*

U.S. Cl. 403—11 **23 Claims**



1. A coupling for releasably connecting a rod to a driving shaft, comprising at least one flat surface on a peripheral end portion of said rod; a coupling socket attached to the face of the driving shaft, said socket having an open lateral side for receiving said one end portion of the rod and at least one flat inner wall matching the flat surface of said portion; and an exchangeable wearing piece fitting between the flat inner wall and the flat surface to transfer rotary moment from said shaft to said rod.

4,362,413

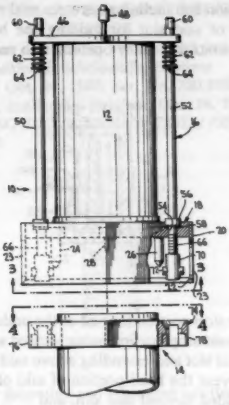
RETRIEVABLE CONNECTOR ASSEMBLY

Richard A. Heard, Dallas, and Aaron E. Pierce, Humble, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Dec. 10, 1979, Ser. No. 102,064

Int. Cl.³ F16B *7/18*

U.S. Cl. 403—14 **9 Claims**



7. A retrievable connector assembly for detachably securing first and second parts together comprising:

frame means attached to the first part and including a rotatable shaft having a threaded end and male coupling means threadedly engaging said threaded end and having pins extending therefrom, said male coupling means being movable along said shaft in response to relative rotation therebetween; and

mounting means attached to the second part and including female coupling means for receiving said male coupling means and having slots therein formed of a longitudinal leg joined with a lateral leg, said pins being longitudinally movable along said longitudinal leg and rotatably movable along said lateral leg in response to rotation of said shaft to lodge said pins in said lateral leg and cause said male coupling means to move longitudinally along said shaft to force the first and second parts together, wherein said female coupling means includes a socket having a mouth with bevelled edges adjacent to said longitudinal leg for guiding said pins into said longitudinal leg and an opening in the bottom of said socket opposite said mouth to permit passage of said threaded shaft and said male coupling means therethrough.

4,362,414

QUICK RELEASE CONNECTOR ASSEMBLY

Fritz Volz, 8020 Denrock Ave., Los Angeles, Calif. 90045

Filed Mar. 16, 1981, Ser. No. 244,190

Int. Cl.³ F16B *7/20*

U.S. Cl. 403—24 **8 Claims**

1. A detachable connector assembly comprising:

a plug member connected at one end thereof to an arcuate plate which is secured to a utilization means, the other end of said plug member having an elongated head portion formed thereat parallel to the axis of curvature of said arcuate plate,

a recepticle member including a hollow housing and a face portion attached to one end of said housing,

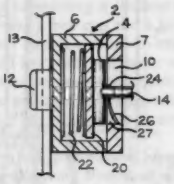
said face portion having an entry opening for receiving therethrough the head portion of said plug member,

the underside of said face portion which is located at the interior of said housing having a slot formed therein, said

slot being spaced from said entry opening and dimensioned to receive and seat the head portion of said plug member when said plug member is inserted through said entry opening and moved into engagement with said slot,

locking means located within the interior of said housing and being positionable adjacent the underside of said face portion,

at least one rising surface formed at the underside of said face portion and inclining between said entry opening and one end of said slot for guiding the head of said plug member from said entry opening into receipt by said slot,



at least one stop portion formed at the underside of said face portion, said stop portion being located adjacent the other end of said slot and extending above said rising surface, so as to prevent the head portion of said plug member from being guided beyond said slot, and

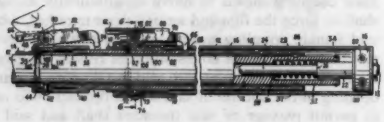
resilient means located within the interior of said housing for biasing said locking means into contact with the head portion of said plug member, in order to removably connect said utilization means to said recepticle member.

4,362,415

EXTENSIBLE AND RETRACTABLE STRUT WITH SAFETY LATCH

Joseph R. Metz, Ridgefield, and Richard C. Lutterman, Danbury, both of Conn., assignors to Norco, Inc., Ridgefield, Conn.

Filed Mar. 31, 1981, Ser. No. 249,687
Int. Cl.³ F16B 7/10
U.S. Cl. 403—109 **11 Claims**



1. An extensible and retractable strut comprising in combination:

(a) a pair of telescoping members relatively shiftable between a retracted position wherein the members are nested one in the other, and an extended position wherein the members are only partially nested one in the other,

(b) a manually-operable collar slideable on the outer member adjacent one end thereof,

(c) cooperable means on said collar and outer member, restricting axial sliding movement of the collar between locking and unlocking positions,

(d) biasing means engageable with the outer member and collar, urging the latter toward its locking position,

(e) releasable means for locking said members to each other when the collar is in its locking position, and

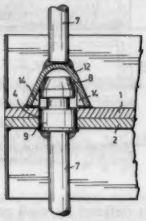
(f) a manually-releasable safety locking means operative in response to the collar being shifted by said biasing means to its locking position, for locking the collar is said position.

4,362,416

EXTENSION JOINT FOR CONCRETE POLES

Matti Kaimo, Virkkala, Finland, assignor to Oy Lohja AB, Nummela, Finland

Filed Jan. 21, 1981, Ser. No. 226,738
Claims priority, application Finland, Jan. 28, 1980, 800237
Int. Cl.³ E02D 5/52
U.S. Cl. 403—316 **4 Claims**



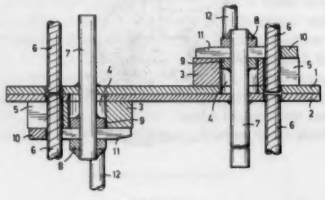
1. An extension joint for concrete poles in which the joint ends of the poles are provided with a bottom plate to which are fastened jointing means comprising a pin projecting from the bottom plate of a first pole, an opening in the bottom plate of a second pole, and a stop face which is located around the opening on the inside of the bottom plate and through which said pin can extend, and a wedge which is transverse to the pin and provided with shanks each engaging the pin on one side and which can be wedged in between a shoulder at the end of the pin and the stop face for locking the pin of the first pole to the second pole with prestressing, whereby, on the path of movement of the wedge shanks, when they are being driven into their positions, there are guide means fastened to the stop face, by the effect of which guide means the shanks are turned towards each other having passed by the pin, thereby locking the wedge in the locking position, and, moreover, the wedge and the free end of the pin are covered by a channel member parallel to the wedge, the longitudinal edges of the channel being fastened to the stop face, the guide means for the wedge shanks consisting of wall portions of the channel bent diagonally inwards at transverse cuts in the side walls of the channel.

4,362,417

EXTENSION JOINT FOR CONCRETE PILES

Markku Vesa, Kytönilytntie 49 E, 00570 Helsinki 67, and Matti Kaimo, Hemgarden, 08700 Virkkala, both of Finland

Filed Apr. 22, 1980, Ser. No. 142,654
Claims priority, application Finland, May 11, 1979, 791517
Int. Cl.³ E04B 1/48
U.S. Cl. 403—317 **8 Claims**



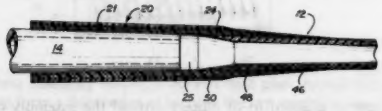
1. A joint assembly for connecting two piles, the bottom plates of which are each correspondingly formed with a projecting pin and a hole spaced therefrom whereby the projecting pin of one pile may be inserted into the hole of a second pile, comprising a flange secured to the end of said pin having an outer dimension less than the dimension of said hole, and a locking plate secured to said pile over the bottom plate and having an opening in registry with said hole through which said flange passes, and a U-shaped wedge insertable about said

pin, between the flange and the upper surface of the locking plate for placing said flange and locking plate under opposing stress thereby securing said piles together.

4,362,418
FERRULE JOINT

Gary A. Loomis, P.O. Box 907, Woodland, Wash. 98674

Filed Dec. 22, 1980, Ser. No. 218,717
Int. Cl.³ B25G 3/00; F16B 7/02; F16D 1/00
U.S. Cl. 403—334 13 Claims

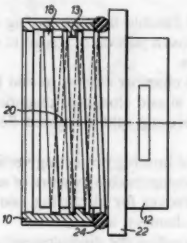


1. A ferrule joint for a fishing rod blank made from joining plural flexible tapered resin shafts having hollow cores, said ferrule joint comprising a ferrule integral with the end of a first shaft and having a tapered bore extending inwardly from the end of the first shaft, with the hollow core of a second shaft being insertable into the tapered bore to frictionally interlock the shafts; a transition section integral with the first shaft having a tapered bore therein joining the tapered bore in the ferrule to the hollow core of the first shaft with the tapered bore in the ferrule and the tapered bore in the transition section being formed from plural overlapping patterns of fiber reinforced resin superimposed on the first shaft around the hollow core.

4,362,419
COUPLINGS

William C. W. Duncan, Bugbrooke, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Jul. 28, 1980, Ser. No. 172,686
Int. Cl.³ F16B 7/18
U.S. Cl. 403—343 5 Claims



1. A coupling comprising:

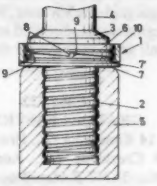
first and second hollow cylindrical bodies, said first body having a helical rib of rectangular cross-section formed on its external surface, and said second body having a helical rib of rectangular cross-section formed on its internal surface, said helical ribs being adapted to mate on relative rotation in one direction between said first and second bodies, said helical rib of said first body having a helical portion which is reduced in width from a position intermediate of its ends whereby when said helical rib in said second body passes into engagement with said rib portion of reduced width a limited degree of relative axial movement is provided between said first and said second bodies; and

resilient means for urging said first and said second bodies relatively axially so that one side of said helical rib of said first body is urged into contact with one side of said helical rib of said second body, the position at which said helical rib of said first body reduces in width having a step whereby the end of said helical rib of said second body engages said step and relative rotation between said first and said second bodies is prevented in the direction to separate said two bodies.

4,362,420
DEVICE FOR MOUNTING AND REMOVING A CUTTER AT THE END OF THE CUTTER SHAFT FROM A CUTTER DREDGE

Corneel R. M. Van der Veken, Wilrijk, Belgium, assignor to Dredging International, Scheldedijk, Belgium

Filed Oct. 24, 1980, Ser. No. 200,419
Claims priority, application Belgium, Oct. 24, 1979, 197799
Int. Cl.³ B25G 3/00; F16B 7/18; F16L 1/00, 15/00
U.S. Cl. 403—343 10 Claims

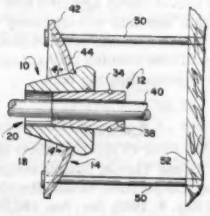


1. A device for mounting and removing a cutter at the end of the cutter shaft of a cutter dredge, a cutter boss being provided with an inner screw-thread and the cutter shaft with an outer screw-thread, which device comprises first and second concentric rings those surfaces of which facing one another being provided with slanting teeth fitting into one another, whereby the slanting of said teeth is opposite to the angle of said screw-threads, and wherein means are provided to lock said first and second rings during the screwing of the cutter on the cutter shaft in such a position relative to one another where said rings have so rotated relative to one another that the joint thickness thereof is increased as compared with the joint thickness of the toothed rings when the teeth thereof have completely rotated into one another.

4,362,421
ANCHOR FOR USE IN THE POST-TENSIONING OF PRESTRESSED CONCRETE

William F. Kelly, 100 Bellaire Dr., New Orleans, La. 70124

Continuation of Ser. No. 130,599, Mar. 17, 1980, abandoned.
This application Dec. 16, 1981, Ser. No. 331,384
Int. Cl.³ B25G 3/20; F16B 2/00, 7/04
U.S. Cl. 403—369 9 Claims



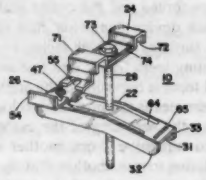
1. A tendon-gripping anchor for use in the post-tensioning of prestressed concrete, including

(a) an anchor case of unitary construction comprising a tubular member having a longitudinal bore

(b) the inner wall surface of said tubular member being tapered from one end to the other

(c) a chuck positioned within the longitudinal bore of said tubular member
(d) said chuck comprising a plurality of transversely arcuate wedge segments
(e) the outer face of said wedge segments being tapered longitudinally for engagement with the tapering inner wall surface of said tubular member
(f) the inner face of each of said wedge segments being provided with a plurality of tendon-gripping members
(g) the wall of said tubular member being thickened at one end of said anchor case
(h) the outer wall surface of said tubular member being tapered from one end thereof to a point intermediate the length thereof
(i) thrust plate receiving means on the outer wall surface of said tubular member, and
(j) a thrust plate having a central opening positioned on said thrust plate receiving means whereby, when said chuck is drawn through said anchor case, hoop stresses exerted by the wedge segments are directed at, and contained by, said thickened wall portion and said thrust plate.

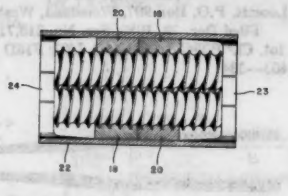
4,362,422
GRATING FASTENER
Paul J. Zinkann, 14 Klonteska Ct., Brevard, N.C. 23712; David R. Tuttle, 719 Creekside Dr., Aurora, Ohio 44202, and Thomas G. Tuttle, 32247 B Hamilton Dr., Solon, Ohio 44139
Filed Sep. 12, 1980, Ser. No. 186,500
Int. Cl.³ F16B 2/12
U.S. Cl. 403—387 17 Claims



1. In a fastening device for fastening a parallel bar grating to a support member comprising: a base member having a width less than the spacing between adjacent grating bars, an aperture disposed centrally in said base member and an engagement portion disposed on a first end of said base member; an upper clamp adapted to engage the top of a bearing bar; a threaded fastening means passing through said upper clamp and engaging said base member; and a swivel clamp having a length greater than the spacing of adjacent bars and adapted to engage the bottoms of two adjacent bars and being rotatably mounted on said base member on an end opposite to said engagement portion, the improvement which comprises: spring means biasing said swivel clamp against a first rotation stop in said engaged position and said swivel clamp being rotatable against said spring bias to a second position parallel to said base member such that said base member and said swivel clamp may be passed through adjacent bearing bars.

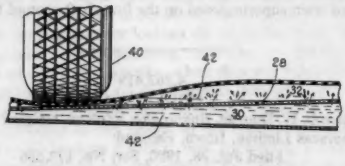
4,362,423
COUPLING FOR COIL-THREAD REBAR
Wendell J. Miles, Grand Haven, Mich., assignor to Williams Form Engineering Corporation, Grand Rapids, Mich.
Filed Sep. 8, 1980, Ser. No. 184,897
Int. Cl.³ B25G 3/36; E04G 7/00
U.S. Cl. 403—393 5 Claims

1. In combination with a pair of overlapped rods each having a regular pattern of protrusions and indentations on the side surfaces thereof, a coupling device comprising:
a pair of blocks each having substantially parallel grooves for laterally receiving overlapped portions of said rods, said grooves having surfaces providing a mating configuration to the surfaces of said rods establishing an interlock between said rods and blocks for transfer of axial forces from one of said rods to the other thereof, said blocks having laterally interengaging portions for alignment of said blocks with respect to each other; and



a sleeve adapted to fit closely around the assembly of said rods and blocks to hold said blocks in engagement with said rods.

4,362,424
SPEED BUMP
Gerald L. Barber, 10 Wittington Ct., Greenville, S.C. 29605
Filed Jul. 30, 1980, Ser. No. 173,739
Int. Cl.³ E01F 13/00
U.S. Cl. 404—6 4 Claims

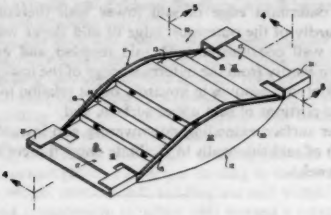


1. A speed bump for use on a road for imparting a controlled jar to a vehicle as the tires of said vehicle pass thereover comprising:
an elongated flexible housing having a length sufficient to extend across a portion of a road to cover a path traveled by vehicles;
an elongated chamber carried in said housing;
fluid carried in said elongated chamber;
means for securing said elongated flexible housing to said road;
said elongated housing projecting vertically above said road and being compressible by a tire of said vehicle as said tire passes thereover for displacing said fluid under said tire from said chamber; and
means for retarding the displacement of said fluid from said chamber and the compression of said housing at a controlled rate as said tire of said vehicle passes over said elongated flexible housing.

4,362,425
ROAD MARKER
Byron P. Dixon, 4574 S. 700 East #3, Salt Lake City, Utah 84107
Filed Dec. 16, 1980, Ser. No. 216,796
Int. Cl.³ E01F 9/04
U.S. Cl. 404—16 3 Claims

1. A retro-reflective highway marker for delineating traffic control on a roadway, said highway marker comprising
a curved top assembly of high strength, resilient materials that deflects into a depression, said top assembly comprising a set of steps arranged in cobbiestep configuration, an end support plate at each opposite end of the steps and a

crossbar with projections extending from each support plate; and



a base assembly having a curved base plate means arranged to form a depression to receive the top assembly and guide means to receive the projections.

4,362,426

ROAD SURFACE COMPRISING INDIVIDUAL INTERCONNECTED ELEMENTS

Willi Ruckstuhl, Augwilerstr. 43, Kloten, Switzerland

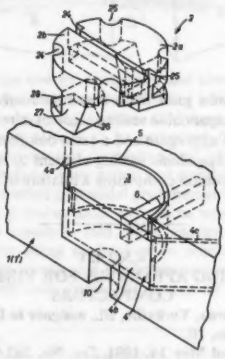
PCT No. PCT/CH80/00100, § 371 Date May 4, 1981, § 102(e) Date May 4, 1981, PCT Pub. No. WO81/00732, PCT Pub. Date Mar. 19, 1981

PCT Filed Aug. 29, 1980, Ser. No. 261,212

Claims priority, application Switzerland, Sep. 3, 1979, 7952/79

Int. Cl.³ E01C *5/00*

U.S. Cl. 404—40 **5 Claims**



1. Road surface formed from individual interconnected elements, whereof each element (1, 1') has in at least one end face at least one semicircular cut-out portion (3, 3') which, together with the corresponding cut-out portion of the adjacent element (1') forms a chamber which receives a substantially cylindrical lock (2), provided with at least two catches (26), each of which interacts with a bolt (6, 6') on each element (1, 1') when the lock is secured, said bolt being anchored in the element and protruding into the cut-out portion (3, 3'), characterized in that the lock comprises one cross-sectionally circular member or two cross-sectionally semi-circular and assembled members (2a, 2b), the radius of said member or members being constant over the entire height of the member, and that each catch (26) comprises a root (27) which projects vertically downwards from the lower face of the member or members (2a, 2b) and a tooth (28) extending horizontally from the lower end thereof, the teeth extending in the same direction along the periphery of the lock (2), the top of each tooth engaging the bottom of the associated bolt (6, 6') which in turn passes below the member (2a, 2b).

4,362,427

SEALING STRIP

Ronald H. Mass, Naperville, and Daniel L. Maloney, Chicago, both of Ill., assignors to Schlegel Corporation, Rochester, N.Y.

Filed May 30, 1980, Ser. No. 154,712

Int. Cl.³ E01C *11/10*

U.S. Cl. 404—64 **8 Claims**

1. A resilient deformable sealing strip for expansion joints in concrete, comprising in cross-section:

a vertically extending central core;

a reinforcing web embedded in the central core, the web having a plurality of interconnected longitudinal and vertical members which inhibit compression and elongation of the central core;

a first pair of fins extending outwardly and substantially perpendicularly from the top of the central core, having ends adapted to engage opposite void walls of the joint, the first pair of fins sealing the joint against entry of moisture and debris; and,

second and third substantially identical pairs of fins extending outwardly and upwardly from the central core, vertically spaced from the first pair of fins, from the bottom of the central core and from one another, the second and third pairs of fins also having ends adapted to engage the void walls, but extending beyond the ends of the first pair of fins when uncompressed, the second and third pair of fins locking the sealing strip in place and providing secondary sealing against the entry of moisture and debris, inward and outward movements of the void walls causing the fins of each of the second and third pair of fins to rotate in opposite directions and to an equal extent, the rotation distorting the central core by compression and elongation thereof, the reinforcing web controlling the distortions on the central core by localizing the compression and elongation in a manner which produces, an equilibrium condition of localized opposing forces which lock the sealing strip in place.

4,362,428

EXPANSION SEAL

James J. Kerschner, Tonawanda, N.Y., assignor to Acme Highway Products Corporation, Amherst, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,702

Int. Cl.³ E01C *11/10*

U.S. Cl. 404—64 **6 Claims**

1. An expansion joint seal for effectively sealing relatively larger size gaps between spaced-apart structural members while providing adequate vertical support, said seal comprising:

an elongated body including longitudinal side edges, an upper corrugated treadway surface integrally connected to an upper portion of each of said side edges, a lower undersurface integrally connected to a lower portion of

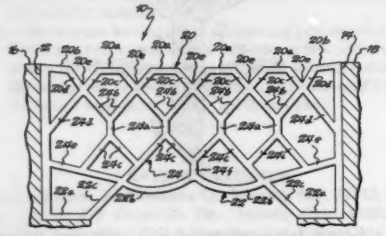
each of said side edges, and an internal web structure confined within the boundaries of said longitudinal side edges, said upper treadway surface and said lower undersurface, said internal web structure comprising:

a plurality of laterally spaced, vertically disposed webs, an upper pair of cross-bars extending upwardly and outwardly from the upper end of each of said vertically disposed webs and connected to said upper treadway surface, a lower pair of cross-bars extending downwardly and outwardly from the lower end of each of said vertically disposed webs and connected to said lower undersurface;

a central, vertically disposed lower web integrally connected at its upper end to one cross-bar each of an adjacent pair of said lower cross-bars and integrally connected at its lower end to said undersurface;

additional lower cross-bars extending from said side edges downwardly and inwardly and directly connected to said undersurface, the outermost ends of each of the outermost of said lower cross-bars joining the adjacent additional lower cross-bar intermediate the ends thereof; and

the lower cross-bars extending downwardly and inwardly from the outermost of said vertically disposed webs being integrally connected with the lower cross-bars extending downwardly and outwardly from the inwardly adjacent vertically disposed webs at a point intermediate the ends of said last-named cross-bars.

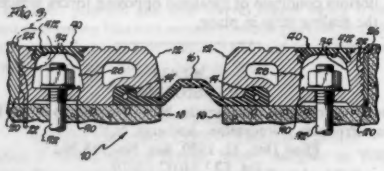


4,362,429

COVER CAP FOR THE ANCHOR BOLT RECEIVING CHANNEL OF AN EXPANSION JOINT SYSTEM RETAINER

Guy S. Puccio, Snyder, and James J. Kerschner, Tonawanda, both of N.Y., assignors to Acme Highway Products Corporation, Amherst, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,178
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—68 **5 Claims**



1. A continuous strip type cap for sealing the anchor bolt channel of a retainer in an expansion joint system for roadways or the like, comprising:

a longitudinally extending sealing member fabricated of a resilient material,

said member having a substantially planar upper surface adapted to be flush with the upper surface of the retainer when said sealing member is positioned in said channel,

a longitudinal groove in each opposite side of said member coextensive therewith and spaced below said planar upper surface thereof,

each of said grooves having an upper and a lower wall with the outermost edge of said lower wall thereof spaced inwardly of the outermost edge of said upper wall,

a side wall coextensive with said member and extending downwardly from the outermost edge of the lower wall of each of said grooves in inwardly offset relation to the side edge portions of said upper surface, and

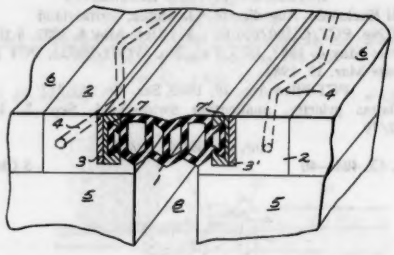
a lower surface extending downwardly and inwardly from each of said side walls to facilitate entry thereof into said channel.

4,362,430

WABOCRETE FMV

Marcel Ceintrey, Anse de Kerjegu, 29120 Combrit, France

Continuation-in-part of Ser. No. 174,457, Aug. 1, 1980, abandoned. This application Oct. 24, 1980, Ser. No. 200,581
Claims priority, application France, Aug. 13, 1979, 79 21124
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—68 **12 Claims**



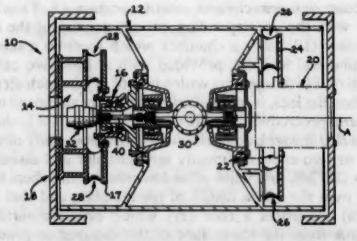
1. An expansion joint for a concrete roadway or the like comprising an expandable sealing element, a resin mortar comprised of coarse aggregate and a resin composition and means anchoring the expandable sealing element to the resin mortar, said resin composition comprising a mixture of epoxy resin and polyureide.

4,362,431

VIBRATING APPARATUS FOR VIBRATORY COMPACTORS

Thomas E. Cochran, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 14, 1981, Ser. No. 263,640
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—117 **17 Claims**



17. A vibratory compactor (10) comprising:

a drum (12) which is rotatable about an axis (A);

a shaft arrangement (34) which is rotatable about a longitudinal axis (B), said shaft arrangement (34) including a housing

structure (36), having a guiding wall (57) and a guide surface (49);

a weight member (42) transversely offset relative to said longitudinal axis (B) and displaceable along a path perpendicular to said longitudinal axis (B);

a compression structure (44) having an engagement member (46) disposed in said housing (36) and a connection member (48) joining said engagement member (46) and said weight member (42), said engagement member (46) being piloted by said guiding wall (57) and said connection member (48) being piloted by said guide surface (49);

means (50) for biasing said weight member (42) and compression structure (44) in a direction tending to reduce the offset of the weight member (42) and displace said weight member (42) and compression structure (44) toward a rotatably balanced position relative to said longitudinal axis (B);

means (14,16,17,24,28) for rotatably supporting said shaft arrangement (34) in said drum (12); and

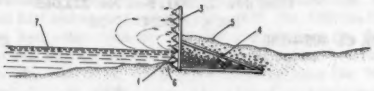
means (32,40) for rotating said shaft arrangement (34) at a selected speed about said longitudinal axis (B).

4,362,432

FLUID WAVE ENERGY DISSIPATING AND ABSORBING STRUCTURE

Maria T. Conover, 1403 Neptune Grove Dr. East, Neptune Beach, Fla. 32233

Filed Mar. 3, 1980, Ser. No. 126,979
Int. Cl.[3] E02B *3/06*; E02D *27/52*
U.S. Cl. 405—33 23 Claims



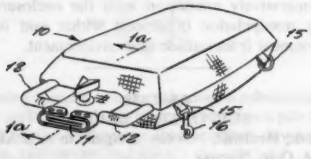
1. A fluid wave energy dissipating and absorbing structure comprising a supporting structure bearing a fluid wave energy dissipating and absorbing surface, said supporting structure being affixed to a surface to be protected from fluid wave action, said wave energy dissipating and absorbing surface being exposed to fluid wave action and comprising an array of alternating three-sided pyramidal protuberances and triangular flat spaces, said protuberances and spaces being alternating in both rows and columns, said wave energy dissipating and absorbing surface being so disposed in relation to impinging fluid waves as to permit said protuberances and flat spaces to coact to dissipate and absorb the energy of impinging fluid waves.

4,362,433

FLOOD DISASTER CONTROL BAG

David R. Wagner, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 30, 1980, Ser. No. 202,371
Int. Cl.[3] E02B *3/10*
U.S. Cl. 405—107 4 Claims



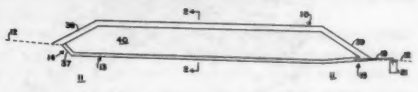
1. A flood control bag, comprising in combination, a fabric outer layer and a waterproof inner liner formed into a rectangular bag, an opening in one end of the bag for filing said bag with water, a fabric handle adjacent each side of said opening, and a ring and clip at each corner of said bag; said bag including sand means for weighting said bag, and valve means for said opening.

4,362,434

PERMANENT DISPOSAL VAULT FOR HAZARDOUS CHEMICAL WASTE MATERIALS

Richard E. Valiga, Center Square, and John R. Rosso, Mechanicsburg, both of Pa., assignors to Stabatrol Corporation, Norristown, Pa.

Filed Oct. 28, 1980, Ser. No. 201,498
Int. Cl.[3] B65G *5/00*; E02D *31/02*
U.S. Cl. 405—128 8 Claims



1. A permanent storage vault for hazardous wastes comprising:

an excavation basin below the existing sloping surface grade of the region selected for the said vault, said excavation basin having a bottom surface which is above the high water table of the region, and having a rim which corresponds with the existing surface grade of the region, said rim including an upper rim end and a lower rim end;

a basin liner comprising a means for confining liquids applied to the excavation basin and extending beyond the said rim;

a liquid collection means applied above said basin liner, said liquid collection means having liquid collection openings at plural locations over the said basin and having an outlet conduit extending beyond the said lower rim of the said excavation basin;

a first layer of water-permeable filler material covering the said liquid collection means and said basin liner;

a monitoring sump located outside the said excavation basin and at least in part below the said bottom surface of the said excavation basin, said outlet conduit being connected to drain liquid into said monitoring sump;

a first layer of water-impermeable cementitious filler applied over the top of said first layer of water-permeable filler as a monolithic composition;

a first water-impervious continuous film applied over said first layer of water-impermeable cementitious filler;

a second layer of water-permeable filler applied above said second water-impermeable filler and serving as a floor for receiving waste materials;

waste materials applied above said second layer of water-permeable filler;

a second water-impervious film applied over said waste materials and having its perimeter joining the perimeter of the said first water-impervious film;

a third layer of water-permeable filler applied to the top of said second water-impervious film;

a second layer of water-impermeable cementitious filler applied as a monolithic composition over the said third layer of water-permeable filler, and connecting at its perimeter with the perimeter of said first layer of water-impermeable cementitious filler;

a third water-impervious film applied to the top of the said second layer of water-impermeable cementitious filler and joining at its periphery with the said basin liner;

a fourth layer of water-permeable filler applied above the said second layer of water-impermeable cementitious filler;

a fifth layer of water-permeable filler applied above the said fourth layer of water-permeable filler; said fifth layer extending beyond the said rim of said excavation basin and

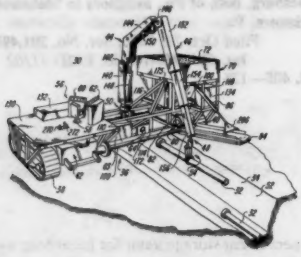
being graded at its perimeter to accommodate the existing surface grade of the region.

4,362,435

APPARATUS FOR LAYING PIPE

John T. Henry, 1226 Summit View Dr., Ft. Collins, Colo. 80524

Filed Jul. 10, 1979, Ser. No. 56,456
Int. Cl.³ F16L *1/02*
U.S. Cl. 405—154 35 Claims



1. Apparatus for laying pipe in a trench and joining successive sections of said pipe as laid, comprising:

an elongated carriage of a length sufficient to straddle said trench;

propelling means mounted at each end portion of said carriage for engaging the surface outward from respective upper sides of said trench and moving said carriage along said trench;

means for driving said propelling means steerably along the length of said trench;

a crane arising from a central portion of said carriage and including an adjustably articulated arm of adjustable length and having an outer end portion controllably movable both laterally with respect to said trench and between respective positions effectively above the upper level of said trench and within said trench below the level of said carriage;

mounting means for securing said crane with respect to said carriage and permitting adjustable tilting of said crane relatively toward and away from the sidewalls of said trench;

and a controllable grapple mounted at said other end portion of said arm and engageable with said pipe.

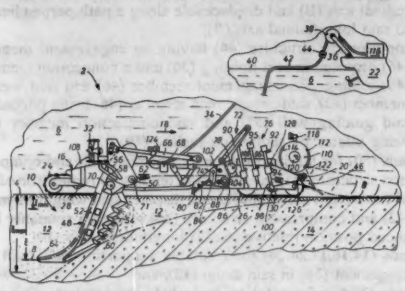
4,362,436

METHOD AND DEVICE FOR EMBEDDING CABLES OR THE LIKE INTO AN UNDERWATER GROUND

Rudolf Harmstorf, Hamburg, Fed. Rep. of Germany, assignor to Hydro-Jet System Establishment, Vaduz, Liechtenstein

Filed Jun. 2, 1980, Ser. No. 155,529
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922410
Int. Cl.³ F16L *1/04;* E02F *5/08*
U.S. Cl. 405—161 50 Claims

1. A method for embedding a cable or the like into an underwater ground in which method the cable is introduced into a zone of reduced density which is produced progressively in the underwater ground by a flushing process, and upon meeting with ground formations which are only insufficiently loosened by the flushing process, the underwater ground is mechanically loosened in the flushing area during performing the embedding process said mechanical loosening being performed in an area which is, in the embedding direction, disposed ahead of the center of the flushing area, wherein the mechanical loosening is automatically controlled in dependence upon the flushing depth so that it is initiated if the flushing depth obtained with the flushing alone becomes smaller than a predetermined minimum value, the mechanical loosening is performed to a working depth which is larger than the minimum value but smaller than the maximum flushing depth obtainable with soft



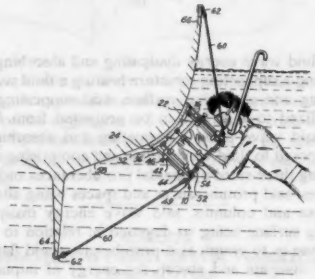
ground formations, and the mechanical loosening is terminated when the flushing depth has exceeded the working depth of the mechanical loosening over a predetermined period of time.

4,362,437

APPARATUS FOR PROVIDING A LIQUID FREE WORKING ENVIRONMENT ON SUBMERGED SURFACES

Sean J. Leary, 10 Circle Ave., Larchmont, N.Y. 10538

Filed Jan. 2, 1981, Ser. No. 222,065
Int. Cl.³ B63C *11/52*
U.S. Cl. 405—188 27 Claims



1. Apparatus for providing a substantially liquid free working environment on a submerged surface comprising:

a liquid impervious enclosure for defining said liquid free working environment in conjunction with said submerged surface;

a sealing edge located on said enclosure for forming a liquid proof seal with said submerged surface;

means cooperating with the sealing edge for altering the shape of said apparatus so that said sealing edge can form a seal with submerged surfaces of different shape; and

means operatively connected with the enclosure for enabling manipulation of objects within said liquid free environment from outside said environment.

4,362,438

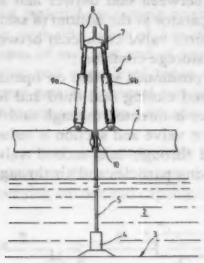
SUPPORTING DEVICE

Ian R. Spink, Hvalstad, Norway, assignor to A/S Akers Mek. Verksted, Oslo, Norway

Filed Oct. 3, 1980, Ser. No. 193,637
Int. Cl.³ E21B *43/01*
U.S. Cl. 405—195 4 Claims

1. A device for supporting equipment (4, 5) on a floating

structure, said equipment preferably extending between the structure (1) and the ocean floor (3), comprising at least two hydraulic cylinders (9*a*, 9*b*) which are arranged between the structure and the equipment and which are connected to a source of hydraulic pressure fluid, characterized in that it further comprises a valve means (17) which for each of the hydraulic cylinders (9*a*, 9*b*) is connected to the respective hydraulic cylinder (9*a*, 9*b*) on the piston rod side of its piston (11*a*, 11*b*) via a first conduit (16*a*, 16*b*) and via a second conduit (18*a*, 18*b*) is connected with the hydraulic cylinder (9*a*, 9*b*) on the opposite side of the piston (11*a*), the valve means (17) being



arranged to connect said first and second conduits (16*a*, 16*b*; 18*a*, 18*b*) for each hydraulic cylinder (9*a*, 9*b*) under normal pressure conditions and under deviant pressure conditions in one hydraulic cylinder (9*a*, 9*b*) to break the connection between said first and second conduits (16*a*, 16*b*; 18*a*, 18*b*) for the remaining hydraulic cylinders (9*a*, 9*b*) and connect the first conduits (16*a*, 16*b*) for these with the first and second conduits (16*a*, 16*b*; 18*a*, 18*b*) of the deviant hydraulic cylinder (9*a*, 9*b*), and in that the area of the piston (11*a*, 11*b*) of each hydraulic cylinder (9*a*, 9*b*) on the piston rod side is equal to the piston area (A) on the opposite side divided by the number of hydraulic cylinders (9*a*, 9*b*) connected to the valve means (17).

4,362,439

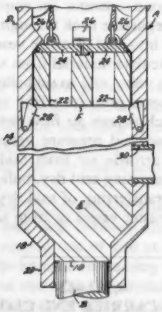
HYDROSTATICALLY OPERATED UNDERWATER PILE DRIVER AND METHOD OF OPERATING SAME

Peter P. Vaynkof, 916 Creekside Dr., Fullerton, Calif. 92633

Filed Mar. 2, 1981, Ser. No. 239,353

Int. Cl.³ E02D 7/20

U.S. Cl. 405—228 **9 Claims**



1. A device capable of being disposed a substantial distance below the surface of a body of water to drive a pile having an upper end by the hydrostatic force exerted downwardly on said device, said device including:

a. a housing assembly that includes an elongate tubular member that has upper and lower open ends, said lower open end capable of slidably engaging said upper end of said pile when said device is vertically disposed and coaxially aligned with said pile; an anvil in said tubular member in contact with said upper end of said pile; a ram slidably movable in said tubular member, said ram capable of occupying either a first position adjacent said upper open end or a second position in contact with said anvil; and a stop that limits said ram from being moved upwardly above said first position in said tubular member, said ram having at least one opening extending transversely therethrough, said anvil, an intermediate portion of said tubular member and said ram defining a first confined space when said ram is in said first position, said tubular member having an opening therein;

b. first means on said ram that when in a first position obstructs said opening and in a second position does not obstruct said opening;

c. second means for raising said ram from said second to said first position;

d. third means for removably supporting said ram in said first position; and

e. fourth means in communication with said opening for evacuating water from said first confined space when said ram is in said first position and said first means in said first position, with said ram when released by said third means being driven downwardly in said tubular member by the weight of a column of said water thereabove to impact on said anvil, and the force of said impact being transferred from said anvil to said pile to drive the latter downwardly, with said first means being moved to said second position, said second means moving said ram to said first position with water from said body of water exerting equal but oppositely directed forces on the top and bottom of said ram, said support means removably engaging said ram when the latter reaches said first position in said tubular member with said ram being successively moved between said first and second positions until said pile has been driven to a desired depth.

4,362,440

TUBULAR LOST BOREHOLE CLOSURE

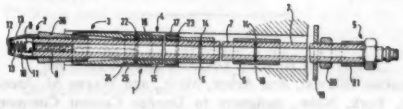
Otto-Ernst Glaesmann, Dortmund; Frank Meyer, Essen, and Walter Marsch, Recklinghausen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,289

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1979, 2903137

Int. Cl.³ E21D 20/02

U.S. Cl. 405—269 **4 Claims**



1. A lost borehole closure, especially for injection of suitable media, such as for instance plastic, into boreholes for consolidation of rock, comprising a tube having a leading end and a trailing end, each provided with an outer screw thread; a one-way valve having a housing threadingly connected to the leading end of said tube; holding means and sealing means surrounding said tube rearwardly of said housing, said holding means and said sealing means being axially compressible and radially expansible by turning said tube; extension means for placing said tube at any selected distance from the outer end of the borehole and comprising a plurality of tube sections and connecting bushings for connecting said tube sections with different restraining forces respectively to each other and to said trailing end of said tube, with one of said tube sections projecting beyond the outer end of the borehole; a screw nipple connected to the outer end of said one tube section for turning said tube sections and said tube to thereby axially

compress and radially expand said sealing means and said holding means; and including a mixing element in said tube in the region of the leading end thereof.

4,362,441

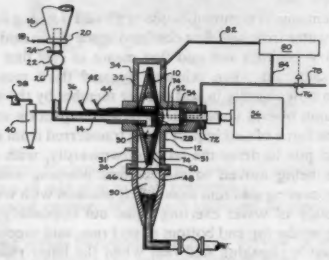
MEANS AND APPARATUS FOR THROTTLING A DRY PULVERIZED SOLID MATERIAL PUMP

John W. Meyer, Palo Alto; Arnold D. Daniel, Jr., Alameda County, and John H. Bonin, Sunnyvale, all of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 36,578, May 7, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,861

Int. Cl.³ B65G *53/40, 53/66*

U.S. Cl. 406—14 **10 Claims**



1. Apparatus for the control continuous feeding of relatively fine particulate material into a high pressure container, comprising:

a rotor having a central hub and a plurality of sprues providing a passageway through which the particulate material is passed,

each of said sprues extending radially outward from an inner periphery of said rotor to terminate adjacent to a control nozzle at the periphery of the rotor,

the sprue at the section adjacent the termination having a low angle of convergence and the nozzle having a substantially greater angle of convergence, and

variable pressure means connected to said control nozzles at a location radially outward from and adjacent to said sprue for varying the gas pressure within said control nozzles to thereby adjust the flow rate of the particulate material.

4,362,442

VENTURI BARGE UNLOADING SYSTEM

Ib Bentzen-Bilkvist, Ann Arbor, Mich., and Wayne M. Jacobson, York, Nebr., assignors to Dundee Cement Company, Dundee, Mich. and Cyclonaire Corporation, Henderson, Nebr.

Filed Apr. 14, 1980, Ser. No. 140,326

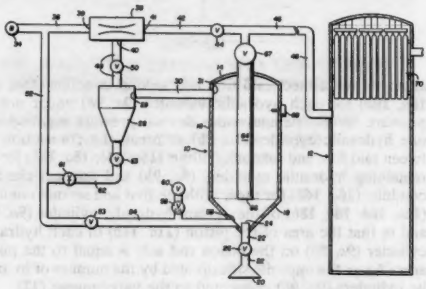
Int. Cl.³ B65G *53/14, 53/28*

U.S. Cl. 406—109 **2 Claims**

2. In a system for unloading dry, bulk, particulate material from a ship, barge, or the like into a pressure vessel and thereafter transferring the material from said pressure vessel to a storage container or silo including a venturi having first and second inlets and a first outlet, a blower for forcing air through said first venturi inlet and said venturi outlet for creating a flow of primary air through said venturi and for thereby inducing a suction at said venturi second inlet; means coupling said venturi second inlet to said pressure vessel; and nozzle means connected to said pressure vessel for filling said pressure vessel with dry, bulk, particulate material when said suction is induced at said venturi second inlet; the improvement comprising:

a cyclone separator connected to said venturi second inlet, said pressure vessel and said blower, said cyclone separator having a first inlet connected to said pressure vessel by a first conduit means and an outlet at the top of the cyclone separator which is connected to said venturi second inlet by a second conduit means, valve means including first, second, third and fourth valves each of which is positioned exteriorly of said pressure vessel, said first valve connected in a third conduit means between said venturi outlet and said storage container, said second valve connected in said second conduit means between said cyclone separator and said second venturi inlet, said third valve connected in a fourth conduit means between said blower and a second inlet to said cyclone separator at the bottom of said cyclone separator, and said fourth valve connected between said pressure vessel and said storage container;

said valves being positioned so that on opening said first and second valves and closing said third and fourth valves, air from said blower is directed through said venturi and then through said first valve and suction is induced in said pressure vessel and through said second valve, said cyclone separator receiving particles and air through said first separator inlet from said pressure vessel and separating said particles from air during the filling of said pressure vessel in response to said induced suction and exhausting air to said venturi through said second conduit means; and so that on opening said third and fourth valves and closing said first and second valves, air from said blower by-passes said venturi for terminating said flow of primary air through said venturi for terminating said induced suction, and air from said blower is directed through said third valve and into the bottom of said cyclone separator for emptying any particles from said cyclone separator back through said cyclone separator first inlet and into said pressure vessel for transferring said dry, bulk, particulate material from said pressure vessel through said fourth valve and to said silo; and



wherein said valve means includes a fifth valve in said fourth conduit means which adjusts air flow between said blower, said third valve, and said pressure vessel, said fifth valve being operable to throttle air from said blower into said pressure vessel for aerating said dry, bulk, particulate material as part of the transferring of said dry, bulk, particulate material to said pressure vessel or from said pressure vessel to said silo.

4,362,443

PNEUMATIC TUBE CARRIER END CLOSURE ADAPTER UNIT

Jeffrey B. Mallory, 2238 High Point Cir., Carrollton, Tex. 75007, and Charles M. Campbell, 609 Ann Lois La., Burleson, Tex. 76028

Filed Jul. 18, 1980, Ser. No. 169,947

Int. Cl.³ B65G *51/06*

U.S. Cl. 406—188 **8 Claims**

1. Apparatus for containing articles to be conveyed through a pneumatic tube, which comprises:

a tubular material-conveying carrier having first and second ends,

at least one hollow end closure housing having first and second ends,

attaching means on the first end of the at least one end closure housing,

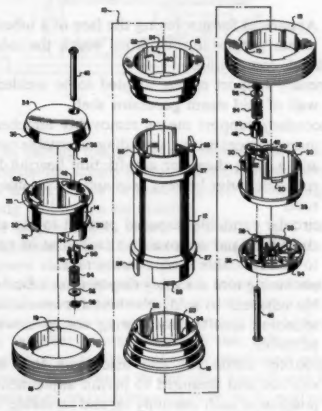
attaching means on the at least one end of said tubular material-conveying carrier,

annular restraining means at the second end of said at least one end closure housing,

annular restraining means set away from said at least one end of said tubular material-conveying carrier,

at least one air seal ring adapted for insertion over said attaching means of said first end of said at least one end closure housing and capable of being restrained against axial movement past said second end of said at least one end closure housing unit by said annular restraining means thereon,

the at least one air seal ring adapted for insertion over the attaching means on the at least one end of the tubular material-conveying carrier and capable of being restrained



by said annular restraining means set off from said at least one end of said tubular material-conveying carrier,

means for securing the attaching means of the first end of said at least one end closure housing to the attaching means of said at least one end of said tubular material-conveying carrier,

space filling means for preventing axial movement of the at least one air seal ring between the annular restraining means on the second end of said at least one end closure housing and the annular restraining means set away from said at least one end of said material-conveying carrier,

at least one disclike cap for covering said second end of said at least one end closure housing unit,

means contained within the at least one end closure housing unit and attaching to the at least one disclike cap for pivoting the disclike cap in its own plane about an axis located near a circumferential edge of the said disclike cap, and

means for creating a torque at the axis of rotation of said at least one disclike cap and acting between said disclike cap and said at least one end closure housing.

4,362,444

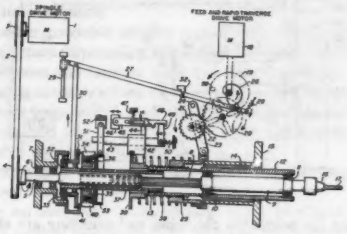
PECK DRILL

John A. Watkins, 361 Country Club Rd., Cheshire, Conn. 06410

Filed Oct. 10, 1980, Ser. No. 195,927

Int. Cl.³ B23B *39/10, 47/18*

U.S. Cl. 408—17 **9 Claims**



1. In a peck drilling machine of the type employing

(a) a spindle having means for supporting a cutting tool,

(b) a spindle housing in which the spindle is supported for rotation, and

(c) means supporting the spindle housing whereby the spindle housing and the spindle can move axially as a unit toward and away from the work, the improvement comprising

(1) a feed screw attached to the spindle housing to be axially movable therewith,

(2) a feed nut disposed upon and engaged with the threads of the feed screw,

(3) rapid traverse means connected to the feed nut for rapidly retracting the spindle away from the work and for rapidly advancing the spindle toward the work by causing the feed nut to be moved axially, the rapid traverse mechanism having means arranged to hold the feed nut fixed in position in the interval between rapid advance and rapid retraction,

(4) drive means for intermittently actuating the rapid traverse means,

(5) peck feed means connected to the feed screw for repetitively feeding the spindle toward the work by causing the feed screw to progressively advance into the feed nut in the intervals between rapid advance and rapid retraction,

(6) a return spring secured to the feed screw and to the feed nut whereby the spring is wound by the advance of the feed screw into the feed nut, and

(7) hitch feed means coupled to the feed screw, the hitch feed means permitting the feed screw to rotate a preset amount in the reverse direction in the interval between the end of a feed stroke of the peck feed means and the end of the next rapid advance.

4,362,445

FLOATING BORING BAR CARTRIDGE

William D. Armbrust, Greensburg, Pa., assignor to Kennametal Inc., Latrobe, Pa.

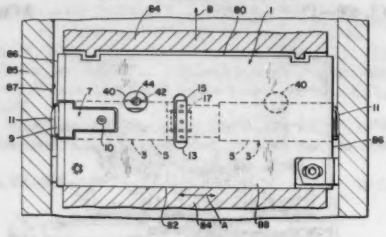
Filed Jul. 7, 1980, Ser. No. 166,468

Int. Cl.³ B23B *29/03*

U.S. Cl. 408—182 **12 Claims**

1. An adjustable floating boring bar cartridge comprising: a boring bar cartridge having oppositely extending apertures, and each aperture having a substantially circular cross sectional configuration; means for releasably holding an indexable apertures, and having a cross sectional configuration similar to and substantially filling said substantially circular aperture cross sectional configuration; means for advancing and retracting said means for releasably holding said indexable cutting insert within said aperture such that a portion of said cutting insert may extend for a variable distance outside of said boring bar cartridge; recesses intersecting said oppositely extending

apertures; and means for releasably clamping and orienting located in said recesses and abutting with said means for releasably holding said indexable inserts, said recesses and said



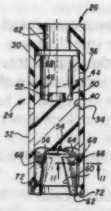
means for releasably clamping and orienting are also located forward of said means for releasably holding said inserts, in both the sense of the direction in which said boring cartridge is to be driven and the direction in which it is to be rotated.

4,362,446

TORCH TIP REBUILDING TOOL

Roland G. Bell, Kermit, Tex., assignor to Thomas Lee Taylor, Odessa, Tex.

Filed Sep. 16, 1980, Ser. No. 187,809
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—211 **6 Claims**



1. In an oxy-acetylene cutting torch tip having spaced seating faces at the inlet end thereof, the combination with said torch tip of a tool by which the seating faces can be refaced;

said tool comprises an elongated body having an outwardly opening cavity formed at one end thereof; a plurality of refacing blades, a plurality of radially spaced slots formed within said body and extending radially towards said cavity; each said blade having an elongated cutting edge formed thereon; means pivotally securing one said blade within one said slot, there being one blade within one slot, with the cutting edge of the blade being directed towards the longitudinal axial centerline of the tool and forming an acute angle therebetween;

said blade lies in a plane which extends through the axial centerline of the tool and can be pivoted within the plane to change the magnitude of the acute angle, so that the cutting edge of the blade can simultaneously engage the spaced seating faces located at the inlet end of a torch tip which may be located within the cavity;

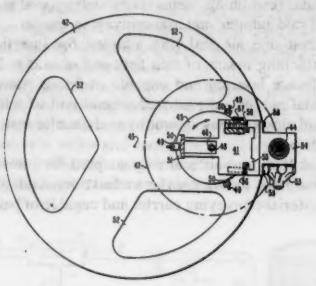
said tool includes a milling element, a cutting face formed on said milling element which lies normal to said axial centerline, a second cavity formed in said main body in opposition to the first recited cavity; means mounting said milling element within said second cavity in a manner to engage the torch tip face located at the outlet end of a torch tip when a torch tip is placed within said second cavity and rotated respective to the main body.

4,362,447

STEAM GENERATOR TUBESHEET FACE MACHINING APPARATUS

Frank M. Pekar, Pensacola, Fla., and Frank W. Cooper, Jr., Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 896,869, Apr. 17, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 61,227
Int. Cl.³ B23C *1/20*; B23B *3/22*; B23F *21/03*
U.S. Cl. 409—200 **3 Claims**



1. Apparatus for machining the face of a tubesheet disposed in a steam generator shell from which the tubes have been removed, comprising,

primary support means adapted to be welded to the inner wall of said steam generator shell,

secondary support means removably attached to said primary support means, including adjustable centering means and a large diameter anti-friction bearing having a non-rotatable outer bearing race and a rotatable inner bearing race,

a circular turntable disposed parallel to the aforesaid tubesheet face and removably attached at its outer periphery to said rotatable inner bearing race,

a machining tool assembly disposed on a face of said turntable adjacent to said tubesheet for machining the corresponding face thereof during rotary movement of said turntable,

mounting means for said machining tool assembly constructed and arranged to permit adjustment in the radial position of such assembly on said turntable, said mounting means being rotatable about a pivot axis on said turntable to effectuate the aforesaid radial position adjustment of said machine tool assembly, and

power operated drive means for turning said turntable during operation of said machining tool assembly.

4,362,448

APPARATUS FOR REMOVING BURRS FROM CONTINUOUS CAST SLABS

Nobuhisa Hasebe; Hiroshi Kawada, both of Yokohama, and Tatsuo Kobatake, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 193,900
Claims priority, application Japan, Oct. 9, 1979, 54-139109[U]
Int. Cl.³ B23D *1/10, 13/02*
U.S. Cl. 409—300 **3 Claims**

1. An apparatus for removing burrs from a surface of a continuous cast slab along the cut edge thereof, said slab being movable in a substantially horizontal direction, said slab comprising

a base;

a support standard extending vertically from said base;

a structure extending vertically from said base;

a first movable means connected to said structure and movable horizontally;

bed means connected movably at one end thereof to said support standard;

an extended jaw means disposed on one surface of said bed means at the other end thereof;

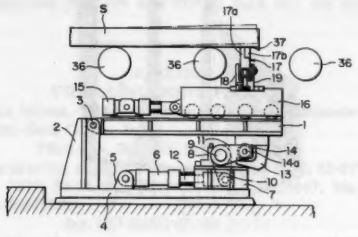
link means operable by said first movable means connected to said structure for vertically moving said extended jaw means, thereby to move said bed means from a horizontal position;

second movable means connected to said bed means on another side thereof;

truck means movably positioned on said other side of said bed means and movable by said second movable means;

and cutting means disposed on said truck means, said cutting means comprising

a plurality of cutting edges disposed to be adjacent said surface of said slab having burrs along the cut edge thereof,



a plurality of cutting tool means for holding each cutting edge, each having means for pivotal movement thereof,

cutting tool holder means for attaching said cutting edges to said cutting tool means for holding,

cutting tool support frame means for holding said cutting tool holder means and said connected cutting edges in a serial manner along the cut edge of said slab,

rod means for selectively moving each of said cutting tool holder means about said means for pivotal movement, and

cylinder means for moving said truck means in a horizontal direction to effect trimming of said slab, whereby said continuous cast slab after cutting is positioned substantially horizontally to have its cut edge having said burrs on one surface of said slab exposed to be cut by said plurality of cutting edges with selective upward and angular movement of said plurality of cutting edges to adjust for the contour of the surface of said slab.

4,362,449

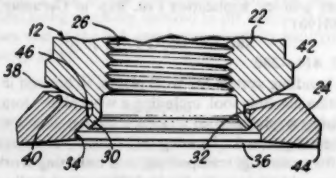
FASTENER ASSEMBLIES

Emil J. Hlinsky, Oak Brook, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Nov. 30, 1979, Ser. No. 98,918

Int. Cl.³ F16B *37/00, 39/04*

U.S. Cl. 411—156 **10 Claims**



1. A fastener assembly for applying a clamp load to the flat, planar surface of a workpiece in a threaded joint, said fastener assembly comprising:

a threaded fastener having a body and having a thread structure disposed generally in a cylindrical plane parallel to and surrounding the central longitudinal axis of said body;

said body including a structure engageable by a tool for tightening of the threaded joint to urge the fastener assembly against the workpiece;

a clamp washer rotatable relative to said body and having a central aperture surrounding said cylindrical plane and interposed between said fastener body and the workpiece;

a body bearing surface defined on the workpiece-facing end of the fastener body and a cooperating washer bearing surface defined on one side of said clamp washer and interfacing with said body bearing surface; and

a workpiece engaging clamp surface defined on the opposite side of said clamp washer;

said clamp surface, prior to tightening, being uniplanar and generally conical and engageable with said workpiece only along a circular line of contact at the radially outer periphery of said clamp surface, and said washer bearing surface, prior to tightening, being engageable with said body bearing surface at the radially inner periphery of said washer bearing surface and spaced from said body bearing surface at the radially outer periphery of said washer bearing surface;

said body bearing surface comprising a continuous annular spherical zone having a center of curvature lying on said body axis;

said body bearing surface and said washer bearing surface having equal radii of curvature;

said washer bearing surface in the tightened condition comprising a similar spherical zone in engagement with the body bearing surface and said clamp surface in the tightened condition comprising a flat, planar surface in engagement with said workpiece.

4,362,450

TORQUE STABILIZING METHOD FOR FASTENERS AND TORQUE STABILIZED FASTENERS

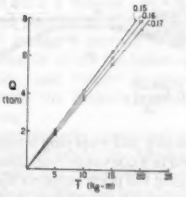
Shiro Hasegawa, and Sanehiro Gima, both of Nagoya, Japan, assignors to Nippon Oil and Fats Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 40,044, May 17, 1979, abandoned. This application Oct. 22, 1980, Ser. No. 199,550

Claims priority, application Japan, May 18, 1978, 53-59587; Nov. 7, 1978, 53-137608

Int. Cl.³ F16B *39/22*; B05D *3/02*

U.S. Cl. 411—258 **3 Claims**



3. A torque stabilizing fastener comprising threaded a metal or metal alloy fastener coated with a torque stabilizing agent comprising a film-forming water emulsifying alkyd resin and from about 2% to about 25% by weight of a polyoxyalkylene monoalkyl ether fatty acid ester surface active agent.

4,362,451

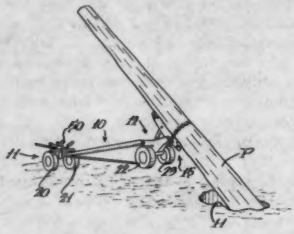
POLE-SETTING APPARATUS

William E. Thiermann, Sr., Mequon, Wis., assignor to Racine Federated Inc., Racine, Wis.

Filed Aug. 25, 1980, Ser. No. 180,862

Int. Cl.³ B66F *11/02*

U.S. Cl. 414—23 **7 Claims**



1. A pole-setting apparatus for raising a pole from a horizontal position into a vertical position in a hole and having a boom assembly extended between a ground-engaging dolly and a cradle-support structure, a cradle assembly including a cradle frame pivotally-mounted between its ends to said cradle-support structure, extensible hydraulic means connected between said cradle-support structure and said cradle frame for causing rotation of the cradle frame, a pair of upwardly and outwardly diverging inner and outer pole supports positioned one at each end of the cradle frame for support of a pole extending horizontally and longitudinally of the cradle frame, and a single binder member carried by the cradle frame for wrap around a pole to hold the pole and cradle frame in fixed relation, said binder member being unequally spaced from said pole supports and closer to said outer pole support to provide a major lever arm in association with the inner pole support during pole setting and a minor lever arm with said outer pole support to prevent fall out of a pole from the cradle frame as the pole approaches an upright position.

4,362,452

PROCESS AND APPARATUS FOR LOADING AND EMPTYING A STORE FOR PRESS SUPPORTS

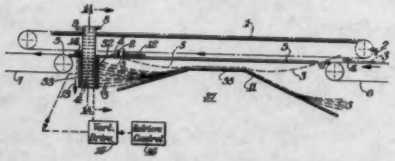
Werner Sparr, Pfungstadt, Fed. Rep. of Germany, assignor to Carl Schenck AG, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,606

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008090

Int. Cl.³ B65H *1/04, 1/06*

U.S. Cl. 414—37 **15 Claims**



1. A process for loading and emptying a temporary store for press supports installed in a conveyor line, comprising the steps of catching and dragging the press supports by their front ends over a storage pit into which the trailing portion of the press support is dropped, the front ends of the press supports being inserted in a storage rack disposed on both sides of the conveyor line, the vertical position of the storage rack being controlled to determine whether the press support is immediately transferred forward along the conveyor line or dropped below its path of movement to temporarily store the press support in the pit, stored press supports being removed from storage by raising the rack to catch the front end of the press support and resume its transport along the conveyor line.

4,362,453

PRE-FABRICATED GRAIN ELEVATOR

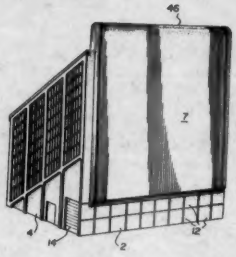
Klaus U. Driedger, Edmonton, Canada, assignor to ABL Engineering Ltd., Calgary, Canada

Filed Jan. 4, 1980, Ser. No. 109,503

Claims priority, application Canada, Sep. 26, 1979, 336363

Int. Cl.³ B65G *3/10, 3/20*

U.S. Cl. 414—268 **5 Claims**



1. A grain elevator comprising a building defined by a base, a top wall, front and rear side walls and a pair of end walls extending between said front and rear side walls; a plurality of parallel, vertically extending rows of inclined bins constructed from prefabricated modules, said bins extending between said front and rear side walls, said bins having an integral slope of predetermined angle; feed means for individually loading each bin in each vertical row at the upper end thereof with grain; and a normally closed discharge means for individually loading each said bin in each vertical row at the lower end of the bin; each said bin including a plurality of sections interconnected in end to end relationship to define a bin, a plurality of bins being stacked one on top of another to form a vertical row of bins, the top of each bin being closed by a superjacent bin, and the tops of of the uppermost bins being closed by a roof; said feed and discharge means being located within said elevator.

4,362,454

HANDLING SYSTEM FOR WORKPIECES

Rudolf Kripzak, Heilbronn, Fed. Rep. of Germany, assignor to Rudolf Kripzak, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,367

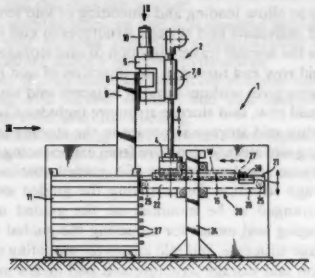
Claims priority, application Fed. Rep. of Germany, May 19, 1980, 3019017

Int. Cl.³ B65G *1/06, 1/10*

U.S. Cl. 414—280 **4 Claims**

1. A handling system for workpieces, to be used in conjunction with a machine tool, including a workpiece storage device comprising a plurality of drawers having locations for the workpieces, guides for locating said drawers at different levels, means for removing, transporting, and returning workpieces to and from said storage device including a vertically and horizontally movable grab, a handling device arranged to withdraw the drawers from said storage device, to raise the drawers into a loading and unloading station, to move the drawer at

the loading and unloading station at right angles to the horizontal direction of movement of said grab, and also to lower



the drawer and push the said drawer back into the storage device.

4,362,455

VIBRATING BOWL FEEDER

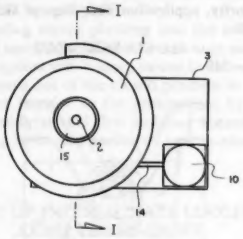
Yoshiyuki Hirose, 7-24-B-4 Hirose 2-Chome, Shimamoto-Cho, Mishima-Gun, Osaka, Japan

Filed Jun. 26, 1979, Ser. No. 52,244

Claims priority, application Japan, Jun. 26, 1978, 53-077683; Apr. 19, 1979, 54-048585; May 5, 1979, 54-055047; May 15, 1979, 54-064725[U]

Int. Cl.³ B65G *65/00, 27/16*

U.S. Cl. 414—306 **5 Claims**



1. A vibratory bowl feeder, comprising:

a base;

a bowl for holding articles to be fed;

a vibratory plate fastened to the bowl;

first means for securing the vibratory plate to the base in a manner that the bowl is rotatable and will move up and down with respect to the base when rotated;

a rotatable shaft;

an eccentric plate secured to the shaft;

motor means for rotating the shaft; and

second means for converting rotational motion of the shaft to oscillatory rotation of the bowl, said second means including a link arm of adjustable length, one end of the link arm being pivotally secured to the eccentric plate and another end of the link arm being pivotally secured to the vibratory plate.

4,362,456

ROTARY LOADER AND STORAGE SYSTEM

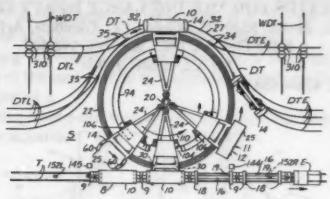
Leonard D. Barry, 19300 Pennington Dr., Detroit, Mich. 48221

Filed Nov. 6, 1978, Ser. No. 957,710

Int. Cl.³ B65G *67/22*; B61K *1/00*

U.S. Cl. 414—334 **23 Claims**

4. A rotary loader having a single vertical pivot post, at least one load arm pivotally mounted and supported to rotate horizontally through an arc about said post, load engaging and support means on the end of each said arm opposite said pivot post, each said load engaging means having outer side edges



curved convex in a horizontal plane such that, during motion of a load carrying conveyance in a path tangential to said arc, said load engaging means will mesh between ledges on the conveyance for transfer of a load to or from the conveyance.

4,362,457

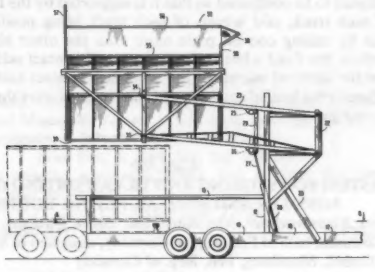
COTTON LOADER AND PACKER

Chauncey D. Taylor, Morgan, and Herbert E. Sims, Blakely, both of Ga., assignors to Hydrapak Corporation, Blakely, Ga.

Filed Jul. 1, 1980, Ser. No. 165,044

Int. Cl.³ B60P *1/02*

U.S. Cl. 414—345 **15 Claims**



1. A vehicle for hauling cotton from a harvester to a transport trailer comprising

an elongated frame having an open end and a closed end, said frame consisting essentially of a U-shaped horizontal base with vertical posts rising up therefrom, the sides of the frame being far enough apart to permit the open end of the frame to straddle the end of a cotton transport trailer;

ground-engaging wheels mounted to said frame;

a basket for receiving and carrying cotton, positioned above, and substantially centered over, the U-shaped base of the frame, the basket being supported by the vertical posts of the frame in such a manner as to be vertically movable from a lowest position in which the bottom of the basket is above the ground a distance of about 1 to 3 feet, to a highest position in which the basket can clear the top of a cotton trailer, said basket having a bottom opening through which the basket's contents can be dumped straight down;

at least one gate hingedly connected to the basket along a horizontal axis to cover the bottom opening, said gate being swingable in a downward direction away from the bottom of the basket to uncover the opening and cause the basket's contents to be dumped, said gate being in a substantially vertical plane when in the open position, with the lowermost edge of said gate being at a lower elevation than the bottom of the basket;

means for moving said basket up and down between its lowest and highest positions;

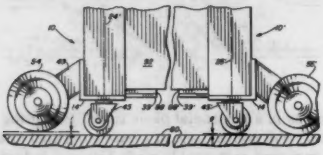
and means for opening and closing said gate.

4,362,458

APPARATUS FOR MOVING LARGE HEAVY OBJECTS

Albert T. Jantzi, 5520 W. Mission La., Glendale, Ariz. 85302

Filed Oct. 14, 1980, Ser. No. 196,402
Int. Cl.³ B60P 3/000
U.S. Cl. 414—458 9 Claims



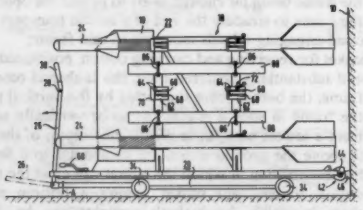
1. Apparatus for moving a large, heavy, unwieldy object over a surface comprising: a pair of hand trucks, each of said trucks having a frame; a lift plate having a lift platform slidably mounted in said frame; force amplifying means for raising and lowering the lift plate relative to said frame; a pair of fixed wheels and a pair of castered wheels mounted on the frame of each truck; the lowest points on the perimeters of one of said pair of wheels being a slight distance above the corresponding points of the perimeters of the other pair of wheels when each truck is substantially vertical on said surface; said object adapted to be positioned so that it is supported by the lift plates of each truck, said wheels of each truck being positioned so that by raising one lift plate more than the other above the surface, the fixed wheels of one truck will contact said surface and the castered wheels of the other will contact said surface whereby the loaded trucks can be maneuvered over the surface by one person.

4,362,459

SYSTEM FOR STORING AND TRANSPORTING GUIDED MISSILES AND SIMILAR FLYING BODIES

Gert Klausbruckner, Moosburg, and Bernd Tüshaus, Högertshausen, both of Fed. Rep. of Germany, assignors to Steinbock GmbH, Moosburg, Fed. Rep. of Germany

Filed Jun. 27, 1980, Ser. No. 163,567
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930555
Int. Cl.³ B65G 67/002
U.S. Cl. 414—584 29 Claims



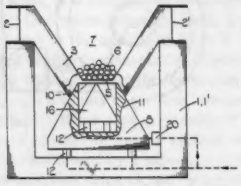
1. System for storing and transporting guided missiles and similar flying bodies including storage structures positionable in a storage location, wherein the improvement comprises that each of said storage structures has a front end and a read end with the front end-rear end direction of said storage structures representing the normal travel direction of said storage structures and a pair of sides extending in the front end-rear end direction, each of said storage structures including means for moving and steering said storage structures so that at least one row of said storage structures can be arranged in a storage location with said storage structures disposed in side-by-side relation, each of said storage structures being positioned alongside one another in said row in closely spaced relation so that the space therebetween is of a width insufficient to form a walkway to allow loading and unloading of said storage structures and individual said storage structures in said row can be moved in the normal travel direction of said storage structures out of said row and turned in the direction of said row of said storage structures without moving adjacent said storage structures in said row, said storage structure includes a safety catch for securing said storage structure in the storage location for preventing said storage structure from experiencing movement caused by an accidental thrust of a guided missile, means on said storage structure for mounting the guided missiles, and means arranged to be mounted on the guided missiles for interengaging said means for mounting the guided missiles on said storage structure, and said means for mounting said guided missiles on said storage structure and said means arranged on the guided missiles for interengagement with said means for mounting said guided missiles on said storage structure each including stops interacting with one another for preventing the guided missiles from moving relative to said support structure, said safety catch is mounted on the rear end of said storage structure, and remote control means are connected to said safety catch, said remote control means comprises an operating member located adjacent the front end of said storage structure for operating said safety catch.

4,362,460

DEVICE FOR DISENTANGLING BARS

Rolf Peddinghaus, Deterberger Str. 25, Ennepetal, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,181
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916228
Int. Cl.³ B65G 47/12
U.S. Cl. 414—745 8 Claims



1. A device for disentangling bars, comprising a storage bed composed of a number of frame units each of which defines a respective upwardly opening V-shaped recess, said bars being received in the recesses and said frame units being spaced apart longitudinally of said bars with the recesses mutually aligned, a plurality of lifters which intermesh with said frame units, each said lifter being vertically movable in a space defined between a respective adjacent pair of said frame units and including a middle part having a substantially horizontal flat upper surface for supporting at least a portion of the disentangled bars whose width perpendicular to the longitudinal axis of said storage bed is intermediate the width of an upper end of each recess and the width of a lower end of each recess, and means for raising and lowering said lifters.

4,362,461

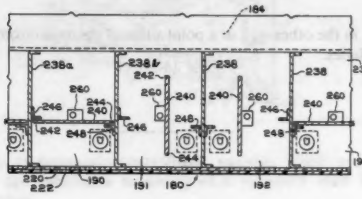
SELECTIVE VACUUM LIFTING DEVICE

William P. Cathers, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 27, 1980, Ser. No. 153,373
Int. Cl.³ B66C 1/02
U.S. Cl. 414—752 10 Claims

1. An apparatus for transferring articles, comprising:

a chamber having apertured wall portions to provide communication between chamber interior and environment;
a first opening providing communication between vacuum means and the chamber interior;
a second opening between said first opening and said apertured wall portions providing communication between the chamber interior and the environment;
first means pivotly mounted within the chamber interior for isolating said second opening and said apertured wall portions from said first opening;
second means mounting said chamber to overlay said second opening for isolating the chamber interior from the environment when said second isolating means is in a closed position;



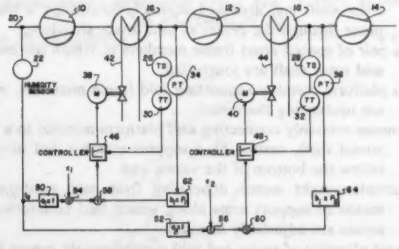
means for biasing said second isolating means toward the closed position;
means acting on said first isolating means for moving said first isolating means to a first position to interconnect said first opening and said apertured wall portions and into a second position to isolate said apertured wall portions from said first opening; and
said first isolating means pivoting into the second position acts on said second isolating means to urge said first isolating means against said biasing means to move said second isolating means out of the closed position to interconnect the chamber interior to the atmosphere by way of the second opening as said first isolating means isolates the first opening from said apertured wall portion.

4,362,462

METHOD OF INTERMEDIATE COOLING OF COMPRESSED GASES

Wilfried Blotenberg, Oberhausen, Fed. Rep. of Germany, assignor to M.A.N. Uternehmensbereich G.H.H. Sterkrade, Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,238
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909675
Int. Cl.³ F04D *29/58*
U.S. Cl. 415—1 **1 Claim**



1. In a multi-stage intercooled compressor system having a plurality of compression stages connected in series with a cooling unit controlled by adjustment means between each stage, an improved method of cooling compressed gases intermediate the stages without forming condensate comprising:
measuring the absolute humidity of the gases to be compressed at the suction side of a first compression stage which corresponds to a dew point τ of the gases at the suction side of the first compression stage;
measuring the temperature and pressure of the compressed gases at the suction side of a successive compression stage designated i;
generating a set point temperature signal on the basis of the linear equation

$$T_i = a_i \tau_a + b_i P_i + c_i$$

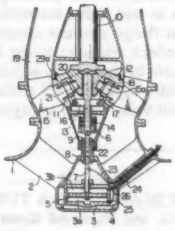
where P_i is the pressure of the compressed gases at the suction side of the successive compression stage designated i, and a_i, b_1 and C_i are constants;
generating a control signal for controlling the cooling of the gases upstream of the compression stage designated i as a function of the set point temperature signal and the actual temperature of the compressed gases at the suction side of the compression stage designated i; and
using the control signal to control the adjustment signal to control the adjustment means of the cooling unit which is upstream of the compression stage designated i.

4,362,463

MOVABLE BLADE PUMP

Sumio Sudo, Oaza Shimoinayoshi; Hiromichi Anan, Iwamamachi, and Masayuki Yamada, Oaza Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,342
Claims priority, application Japan, Feb. 6, 1980, 55/12505; Jun. 18, 1980, 55/81440
Int. Cl.³ F01D *7/00, 11/00*
U.S. Cl. 415—129 **5 Claims**



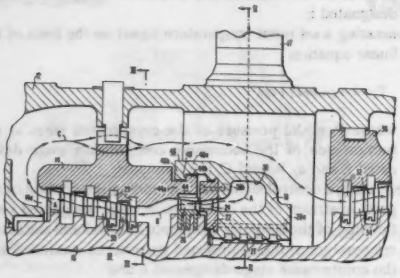
1. A movable blade pump comprising:
a hydraulic cylinder chamber secured to a suction casing for mounting a hydraulic cylinder;
a piston mounted in said hydraulic cylinder;
a non-rotating actuating shaft secured at one end portion thereof to the piston and formed at the other end portion thereof with a connection;
a solid rotary actuating shaft supported by the connection of the non-rotating actuating shaft and connected to an impeller boss mounted on a main shaft for rotation therewith;
blades rotatably supported by the impeller boss; and
a control mechanism for converting the up and down movement of the rotary actuating shaft into the rotational movement of the blades.

4,362,464

TURBINE CYLINDER-SEAL SYSTEM

Alvin L. Stock, Wallingford, Del., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 22, 1980, Ser. No. 180,769
Int. Cl.³ F01D *25/26, 25/24*
U.S. Cl. 415—136 6 Claims



1. An axial flow elastic fluid turbine comprising:

a rotor;

an outer casing;

an inlet nozzle ring disposed within said outer casing circumferentially about said rotor with a radial separation space between said nozzle ring and said rotor, said inlet nozzle ring having upper and lower portions each of which includes a plurality of nozzle chambers rigidly joined together, said nozzle ring having a first flange portion which includes an axially extending component and a radially extending component joined thereto; and

an inner casing supported within said outer casing and disposed circumferentially about said rotor, said inner casing having first and second axial ends, said first end being disposed axially adjacent said nozzle ring and said second end opening into said outer casing, said first end having a second flange portion which includes an axially extending element and a radially extending element joined thereto, said radial extending element protruding in the opposite radial direction as said radial extending component, said first and second flange portions cooperating to seal and structurally interlock said inlet casing to said nozzle ring, said radial element being radially adjacent said axial component and axially adjacent said radial component, said radial component being axially engagable with said radial element.

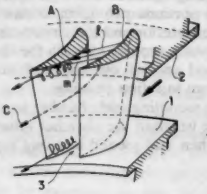
4,362,465

SET OF BLADES FOR A TURBINE

Gilbert Riollet, Paris, and Raymond Bessay, Belfort, both of France, assignors to Societe Anonyme Dite: Alsthom-Atlantique, Paris, France

PCT No. PCT/FR79/00090, § 371 Date Jun. 5, 1980, § 102(e) Date Jun. 2, 1980, PCT Pub. No. WO80/00729, PCT Pub. Date Apr. 17, 1980
PCT Filed Oct. 4, 1979, Ser. No. 196,798
Claims priority, application France, Oct. 5, 1978, 78 28461
The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.
Int. Cl.³ F02C *7/92*
U.S. Cl. 415—144 5 Claims

1. In a set of blades for a turbine, said set of blades including a group of blades bearing opposite convex and concave surfaces disposed between an upper plate and a lower plate which delimite a group of passages, the improvement wherein, for each blade, said set includes at least two ducts (13, 14), one in the upper plate (12) and the other in the lower plate (11), each duct (13, 14) opening at one end in the neighbourhood of the convex surface of the blade and at the constriction (6) of the passage which is delimited by the convex surface of said blade



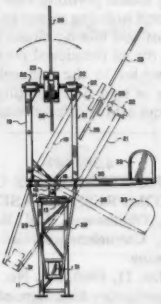
and, in the other end, at a point situated upstream from said set of blades.

4,362,466

WIND-OPERATED POWER-GENERATORS AND WIND WHEELS THEREFOR

Walter Schonball, Gielsdolferstrasse 16, 5300 Bonn 1, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,595
Int. Cl.³ F03D *7/02*
U.S. Cl. 416—142 1 Claim



1. A wind operated power generator comprising:

a tower structure;

a wind-wheel comprising a plurality of vanes carried by a rotor shaft and arranged normally to occupy a vertical plane through the center of said tower structure;

a pair of spaced apart frame members in which the ends of said rotor shaft are journalled;

a platform member supporting said frame members, which are upstanding therefrom;

means rotatably connecting said platform member to a horizontal shaft, carried by a support member and disposed below the bottom of the vanes; and

counterweight means depending from said platform by means of support arms along which said counterweight means are adjustably movable;

said plurality of vanes and said counterweight means being disposed to lie in the vertical plane with said horizontal shaft, and being horizontally rotatable about said shaft to maintain the weight of the wind-wheel centered over said horizontal shaft.

4,362,467

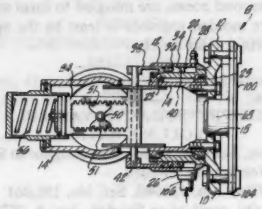
VARIABLE PITCH PROPELLER DEVICE

Morris C. Elliott, 11723 Norino Dr., Whittier, Calif. 90601

Continuation-in-part of Ser. No. 10,483, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 841,130, Oct. 11, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 59,285

Int. Cl.[3] B64C *11/38*

U.S. Cl. 416—157 R 19 Claims



1. A hydraulically-controllable variable pitch propeller device for removable mounting of a propeller shaft flange comprising:

(a) a mounting flange removably mountable on an engine propeller shaft flange to rotate as the engine propeller shaft rotates;

(b) a propeller hub for supporting propeller blades, the hub being supported by the mounting flange to rotate as the mounting flange rotates;

(c) a propeller hydraullic mechanism supported by the mounting flange and positioned between the mounting flange and the propeller hub, the propeller hydraulic mechanism comprising a cylinder and a piston slideable therein in response to the action of a hydraulic fluid, the cylinder and piston remaining stationary as the mounting flange and propeller hub rotate; and

(d) means for varying the pitch of the propeller blades in response to movement of the piston within the cylinder, said varying means being supported by the mounting flange to rotate as the mounting flange rotates;

wherein the propeller hub, the propeller hydraulic mechanism, and the varying means, when mounted on a propeller shaft, are axially aligned with the propeller shaft.

4,362,468

SINGLE CURVATURE FAN WHEEL OF A DIAGONAL FLOW FAN

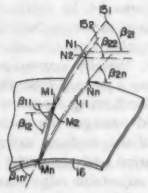
Yoshiyasu Nishikawa, Ono; Chosei Harada, Akashi, and Masao Nakano, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 872,459, Jan. 25, 1978, Pat. No. 4,227,868. This application Jun. 20, 1980, Ser. No. 161,401

Claims priority, application Japan, Jan. 28, 1977, 52-8947

Int. Cl.[3] F04D *29/30*

U.S. Cl. 416—186 R 1 Claim



1. A fan wheel of a diagonal-flow fan for propelling a flow of a gas, said fan wheel comprising a rotational shaft, a frusto-conical main plate coaxially fixed to the shaft, a frusto-conical side plate spaced apart from the main plate and forming therebetween a diagonal flow path for the gas, and a plurality of fan blades each fixed at respective opposite side edges to the inner surfaces of the main and side plates and having an inner entrance part and an outer exit part, said entrance and exit parts extending transversely with respect to said diagonal flow path, said blades being secured between said frusto-conical main and side plates, said frusto-conical side plate being coaxially fixed with respect to the axis of rotation of the shaft, the cone angle of the main plate being greater than the cone angle of the side plate, each of said fan blades being in the form of a curved plate of a surface shape conforming to a portion of a cyindrical surface with a longitudinal axis, said portion being formed of elements constituted by mutual intersection lines between said cylindrical surface and successive coaxial conical surfaces varying between said conical surfaces of said main and side plates corresponding to ideal stream surfaces, respectively, said coaxial conical surfaces progressively diminishing in cone angle from said main plate to said side plate and having a common axis coinciding with said axis of rotation of the shaft and lying in a plane which is in parallel spaced relationship to said longitudinal axis of the cylindrical surface, said common axis being inclined at an angle with respect to said longitudinal axis when viewed in a direction perpendicular to said plane; and further defined by a rectangular coordinate system with two axes lying in a plane perpendicular to the longitudinal axis of said cylindrical surface and having its origin at the vertex of one of said conical surfaces; one of said axes lying in a plane which includes a line passing through the vertices of said conical surfaces and is parallel to said longitudinal axis, the coordinate of the longitudinal axis with respect to the other of said axes is negative.

4,362,469

DEVICE FOR DERIVING ENERGY FROM A FLOW OF FLUID

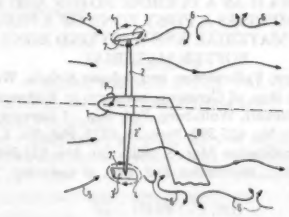
Theodoor van Holten, Pijnacker, Netherlands, assignor to Stichting Energieonderzoek Centrum Nederland, The Hague, Netherlands

Filed Aug. 25, 1980, Ser. No. 181,391

Claims priority, application Netherlands, Sep. 4, 1979, 7906627

Int. Cl.[3] F03D *1/06*

U.S. Cl. 416—191 3 Claims



1. Apparatus for deriving energy from a flow of fluid, such as a windmill driven by a flow of air, said device comprising a hub which is rotatable around an axis and upon which substantially radially extending propeller wings are attached in a twisted way, such that substantially along the entire length of the wings the relative flow direction of the fluid, occurring during operation, will exert a driving rotating force on the hub, the wings being provided at their ends with auxiliary blades, which seen in a sectional plane defined by the relative flow direction of the fluid and the centerline of the wings are directed such that the forward elongation of the chord of the blades profile situated in said plane will intersect a line positioned in said plane and running parallel to the said flow direction and through the rotational axis of the hub, characterized by that the device has the axis of rotation of the hub at an angle

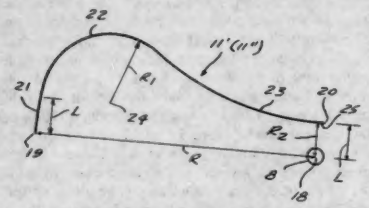
of 15°–45° to the horizontal whereby said auxiliary blades are so formed and have such an angle of adjustment, that they generate during operation a lifting force substantially directed radially in the direction of the hub.

4,362,470

WIND TURBINE

Gerlando J. Locastro, 28 Rosemary Ln., Centereach, N.Y. 11720, and Peter P. Giemsch, 1020 Hawkins Ave., Lake Grove, N.Y. 11755

Filed Apr. 23, 1981, Ser. No. 256,905
Int. Cl.³ F03D 3/06
U.S. Cl. 416—197 A 9 Claims



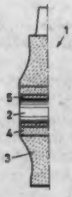
1. A wind turbine, comprising a shaft rotatable about an axis; and a plurality of blades mounted on said shaft and arranged to be rotated by wind and to thereby rotate said shaft, each of said blades having an outer portion which has an outer edge formed at the outer end of a radius with a center at said axis and extends only rearwardly from said outer edge over a circumference described from said center, each of said blades having an inner edge which is rearwardly offset relative to said outer edge and also from said radius in a direction which is normal to said radius by a predetermined distance, said outer portion having a length which corresponds to said distance, each of said blades having a central portion including a radially outer section and a radially inner section formed so that said radially outer section is concave toward said radius and described from a center which is offset from said radius in the normal direction by said distance, whereas said radially inner section is convex toward said radius.

4,362,471

ARTICLE, SUCH AS A TURBINE ROTOR AND BLADE WHICH COMPRISES A FIRST ZONE OF A NONOXIDE CERAMIC MATERIAL AND A SECOND ZONE OF A SOFTER MATERIAL

Manfred Langer, Fallersleben, and Johann Siebels, Wolfsburg, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Division of Ser. No. 635,399, Nov. 26, 1975, Pat. No. 4,214,906.
This application Mar. 5, 1980, Ser. No. 127,393
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1974, 2456435
Int. Cl.³ F01D 5/28
U.S. Cl. 416—241 B 14 Claims



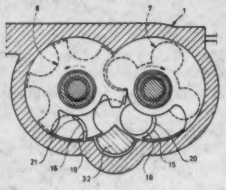
1. An article, such as a turbine rotor and blade, which comprises a first zone of a nonoxide ceramic material; a second zone of a different, softer material which can be soldered or welded; and a transition region between said zones which bonds said zones together; wherein said transition region comprises intermingled materials of the first and second zones, which article is formed from two powders, the first powder being capable of forming said nonoxide ceramic material and the second powder being selected from the group consisting of Al_2O_3, 52% Cu-35% Cr-13% Ni, 35% Cu-15% Cr-50% Ni, Co-Ni-Fe compounds, Co-Ni-Fe-Mo compounds, transition metals, and transition metal compounds, which powders are introduced into respective portions of a mold corresponding to said first and second zones, are mingled to form said transition region, and are molded together at least by the application of pressure to form a solid article.

4,362,472

ROTARY COMPRESSOR WITH VARIABLE BUILT-IN VOLUME RATIO

Rolf I. Axelsson, Norrkoping, Sweden, assignor to Stal Refrigeration AB, Norrkoping, Sweden

Filed Jun. 9, 1980, Ser. No. 158,061
Claims priority, application Sweden, Jun. 8, 1979, 7905002
Int. Cl.³ F04B 49/00
U.S. Cl. 417—53 7 Claims



1. In the operation of a rotary compressor where a medium is compressed in a working chamber formed between at least one rotor and a wall surrounding the rotor, said working chamber on rotation of the rotor sucking in the medium from an inlet, after which the working chamber is closed from the inlet and decreased in volume so as to compress the medium, the working chamber thereafter being brought into communication with an outlet by an edge of the rotor together with an adjustable edge of an outlet port uncovering a passage from the working chamber to the outlet, said edge of the outlet port being displaceable to vary the built-in volume ratio of the compressor and cause the pressure in the working chamber, when it begins to open towards the outlet, to become adapted to the pressure in the outlet, the method which comprises sensing an operational quantity which is a measure of the energy supplied to the rotor for comprising the medium and transferring it to the outlet, and intermittently displacing said edge of the outlet port until said operational quantity acquires a value corresponding to a minimum of said energy.

4. In a rotary compressor, the combination of a rotor, a housing having a wall surrounding the rotor and forming therewith a working chamber, the housing having an inlet for a medium to be compressed and an outlet for the compressed medium, the rotor being operable by rotation thereof to cause the working chamber to suck in the medium from said inlet and thereafter to close the chamber from the inlet and decrease the volume of the chamber, thereby compressing the medium therein, the housing having a passage from the working chamber to said outlet and also having a port with an adjustable edge for uncovering said passage, the rotor being operable after said compressing of the medium to bring the working chamber into communication with the outlet by an edge of the rotor together with said adjustable edge uncovering said passage, said adjustable edge of the port being displaceable to vary the built-in volume ratio of the compressor and cause the pressure in the working chamber, when it begins to communicate with the outlet, to become adapted to the pressure in the

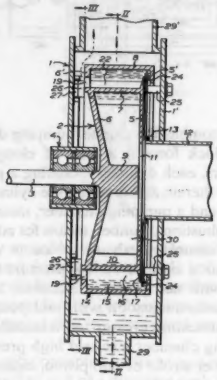
outlet, means for supplying energy to the rotor for compressing the medium and transferring it to said outlet, means for sensing an operational quantity which is a measure of said supplied energy, an adjusting motor operatively connected to said adjustable edge of said port, and a regulator connected to the sensing means for operating the motor intermittently to displace said edge of the outlet port until said operational quantity acquires a value corresponding to a minimum of said energy.

4,362,473

ROTARY COMPRESSOR FOR GAS AND LIQUID MIXTURES

Sten O. Zeilon, Heimdalsgatan 21, S-260 14 Glumslöv, Sweden

Filed May 19, 1980, Ser. No. 151,284
Int. Cl.³ F04C *19/00*
U.S. Cl. 417—68 **16 Claims**



1. A rotary compressor for a gas and liquid mixture and comprising a disk-like rotor **(2)** disposed in a fixed pump housing **(1)** and having an annular peripheral gas and liquid channel **(14)**, characterised in that the channel **(14)** includes an annular radially outer space **(15)** for an entrapped liquid annulus and a radially inner, concentric annular space **(16)** for gas, which is defined by a liquid trapforming side wall **(17)** which penetrates into the liquid annulus space **(15)**; and that the gas space **(16)** is divided into suction and compression chambers **(16*b* and 16*a*,** respectively) by one or more transverse walls **(18)** connected to the rotor **(2)** and extending inwardly toward and penetrating into the liquid annulus space **(15)**, and by planar liquid jets **(31)** which are deflected from the rotating liquid annulus in the space **(15)** therefor by means of at least one blade **(22)** which is fixedly anchored in the pump housing **(1)** and extends axially along the liquid annulus space **(15)**.

4,362,474

CENTRIFUGAL FUEL PUMP WITH AUTOMATICALLY SWITCHED JET INJECTION

Merritt B. Andrews, Westfield, Mass., assignor to United Technologies Corp., Hartford, Conn.

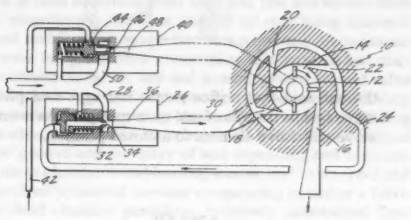
Filed Dec. 20, 1979, Ser. No. 105,685
Int. Cl.³ F04B *23/14*
U.S. Cl. 417—80 **4 Claims**

1. A fuel pump for supplying fuel from a fuel supply to an engine that has a fuel inlet and a bypass fuel flow outlet, characterized by:

a centrifugal pump having a centrifugal pump inlet, a primary centrifugal pump outlet for providing a primary fuel flow to the engine fuel inlet, and a secondary centrifugal pump outlet for providing secondary fuel flow at a flow rate that is greater than the primary fuel flow rate at any given pump speed, and

a jet injector system connected to the fuel supply, the bypass fuel flow outlet and said secondary centrifugal pump outlet, through which fuel is supplied to the centrifugal pump inlet from the fuel supply in separately controlled mixtures of excess fuel flow and said secondary fuel flow to increase the fuel pressure in said primary outlet inversely with primary flow pressure below a certain primary flow pressure and increase fuel pressure in the centrifugal pump inlet in proportion to the pressure in the bypass outlet,

said jet injector system comprising first and second injector fuel flow circuits for connection to the supply and through which fuel is supplied to the centrifugal pump inlet, the flow through each of these circuits being controlled by a corresponding jet injector assembly, each assembly including a throat connected to the centrifugal pump inlet and a movable injector nozzle for throttling the flow in the throat; one of said jet injector assemblies being connected to the centrifugal pump secondary outlet for mixing said secondary flow with fuel supplied to the centrifugal pump inlet and being controllable, in relation to the fuel pressure in said secondary outlet, to provide progressively less fuel from the fuel supply as the fuel pressure in said secondary pump outlet increases, and a second of said jet injector assemblies being connected to the engine excess flow outlet for providing a mixture of bypass fuel flow and fuel from said fuel supply, and being controllable, in relation to the pressure in said bypass fuel outlet, to provide progressively more fuel to the centrifugal pump inlet as the pressure in said excess fuel flow outlet decreases.



4,362,475

COMPRESSOR INLET VALVE

William R. Seitz, La Porte, Ind., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Mar. 16, 1981, Ser. No. 243,828
Int. Cl.³ F04B *49/00*; F16K *31/143, 31/383*; F15B *15/27*
U.S. Cl. 417—295 **30 Claims**

1. A compressor inlet valve comprising

a valve housing,

a control tube disposed at least partially within said housing and having a first portion adapted to be in communication with a source of fluid,

valve element means disposed within said housing and mounted on said control tube for relative movement thereon,

valve seat means disposed within said housing for cooperating with said valve element in opening and closing said valve,

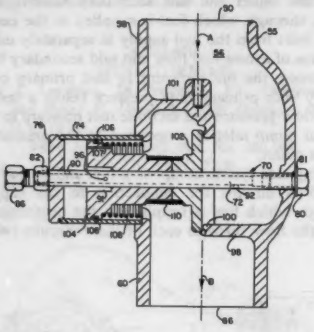
piston means disposed within said housing mounted on said control tube for relative movement thereon,

said piston means being interposed between said control tube first portion and said valve element,

main spring means for biasing said piston generally toward said control tube first portion, and

first orifice means formed in said control tube adjacent to

said piston, whereby at least a portion of the fluid introduced into said control tube first portion will emerge



through said first orifice means and urge said piston to move against the bias of said main spring means in order to move said valve element to a closed position.

4,362,476

SECURING APPARATUS FOR ELECTRIC FUEL PUMPS

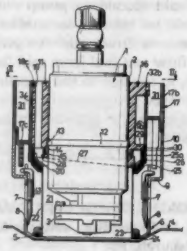
Ulrich Kemmner, Sachsenheim, and Karl Ruhl, Niefern, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,890

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928469

Int. Cl.³ F04B *17/00*; F01D *5/10*; F04D *29/60*

U.S. Cl. 417—360 **15 Claims**



1. A securing apparatus for an electric fuel pump, comprising a lower pumping portion and a combined electromotor arranged for direct installation in fuel tanks of motor vehicles and the like, said apparatus further including a fuel spinner fixedly mounted in a suction area in the fuel tank, and thereby arranged to form a suction basket separated from the remaining tank area by sieve means, said fuel spinner including a lowered element an intermediate element secured on the lowered element, said intermediate element having recesses therein, a sleeve member of rubber-like or elastomeric material arranged to encompass a portion of said pump and is secured thereon, said sleeve member secured on said pump includes equally spaced radially outwardly protruding projections at the top thereof which engage and are supported by said recesses in said intermediate element of said fuel spinner whereby said sleeve member is secured on said intermediate element in such a manner that said sleeve is stressed primarily by shear and bending forces.

4,362,477

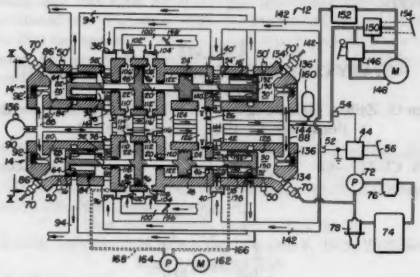
INTERNAL COMBUSTION ENGINE OR PUMPING DEVICE

Kenneth S. Patten, 1920 Latham St., #1, Mountain View, Calif. 96040

Filed Jan. 14, 1980, Ser. No. 111,489

Int. Cl.³ F04B *17/00, 35/02*; B65H *59/10*

U.S. Cl. 417—364 **12 Claims**



1. An internal combustion engine/pumping device comprising an engine block forming a pair of elongated coaxially arranged cylinders, each cylinder including a piston arranged for reciprocation therein and dividing the cylinder into a combustion chamber and a pumping chamber, means for injecting fuel into said combustion chamber, means for admitting air into said combustion chamber, exhaust means in communication with said combustion chamber, a low pressure fluid conduit in communication with said pumping chamber, a high pressure fluid conduit in communication with said pumping chamber, means for communicating pressurized transmission drive fluid from said pumping chamber into said high pressure fluid conduit during a power stroke of said piston, means for admitting transmission drive fluid from said low pressure conduit into said pumping chamber prior to said power stroke, means for communicating said high pressure fluid conduit with work means to be driven by operation of said engine, a mechanical coupling interconnecting said two pistons for operation of said two pistons in opposition to each other, said mechanical coupling comprising a rigid shaft interconnecting the two pistons, a second pair of similar elongated cylinders each including a piston dividing the respective cylinders into a combustion chamber and a pumping chamber, said second pair of cylinders and pistons being in coaxial alignment with each other, said pistons in said second pair of cylinders being interconnected by a rigid shaft, said two pairs of opposed pistons being arranged in parallel side-by-side relation and further comprising means interconnecting said two shafts for assuring synchronized reciprocating movement thereof in opposition to each other, said means interconnecting said two shafts comprising a synchronizing piston mounted upon each shaft and disposed for reciprocation within a synchronizing cylinder, fluid passages interconnecting the opposite ends of the two synchronizing cylinders.

4,362,478

BYPASS VALVE FOR SUCKER ROD PUMPS

Leonard L. Huckaby, P.O. Box 152, Wayne, Okla. 73095

Filed Jan. 26, 1981, Ser. No. 228,064

Int. Cl.³ F04B *21/00, 39/00*

U.S. Cl. 417—434 **3 Claims**

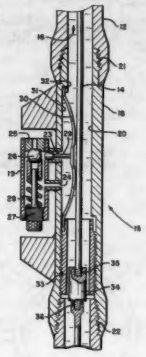
1. A bypass valve assembly for placing the interior of a pipe string above a pump operated by sucker rods in the string, in communication with the well annulus to thereby permit emptying of the pipe string of fluid, said assembly including, in combination:

(a) a pipe section having a central bore and upper and lower

threads for connection into a joint in the oil pipe string, said pipe section further including bore means in its side wall

(b) a hollow valve body mounted on the exterior of said pipe section in communication with said bore means and including a valve seat and ball seated on the valve seat juxtaposed the bore means, removal of the ball from the valve seat placing the interior of the pipe string into communication with said well annulus;

(c) adjustable means on said valve body for biasing said ball against said seat with a given force;



(d) a laterally movable pin passing through said bore means with one end juxtaposed said ball and its opposite end extending radially into said pipe section;

(e) a belly spring in said pipe section extending vertically along an internal side to overlie said opposite end of said pin; and

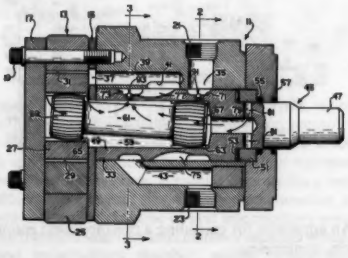
(f) a tripping sub connected between two sucker rods below said belly spring and of a diameter such as to urge the pin radially outwardly when pulled up past the belly spring to thereby unseat the ball from said valve seat and permit fluid in the pipe string to drain to the well annulus by way of said bore means, interior of the valve body and through the valve seat.

4,362,479

ROTARY FLUID PRESSURE DEVICE AND LUBRICATION CIRCUIT THEREFOR

James H. Pahl, Wayzata, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 25, 1981, Ser. No. 247,463
Int. Cl.³ F01C *1/02*
U.S. Cl. 418—61 B **8 Claims**



1. In a rotary fluid pressure device of the type including housing means defining a first fluid port, a second fluid port, and a valve bore; a gear set associated with said housing means including an internally-toothed member and an externally-toothed member eccentrically disposed within said internally-toothed member for relative movement therebetween, the teeth of said members interengaging to define expanding and contracting volume chambers during said relative movement; output shaft means extending from said housing means and rotatably supported thereby; a valve spool rotatably disposed within said valve bore and operatively associated with said output shaft means to rotate in synchronism therewith; drive shaft means operable to transmit movement of said externally-toothed member into rotational movement of one of said output shaft means and said valve spool, said drive shaft means cooperating with said externally-toothed member to define a rearward connection means and cooperating with said one of said output shaft means and said valve spool to define a forward connection means; said valve spool defining first and second axially-spaced annular grooves on the outer periphery thereof in fluid communication with said first and second fluid ports, respectively, said first annular groove being disposed adjacent said forward connection means and said second annular groove being disposed intermediate said forward and rearward connection means; and said housing means and said valve spool cooperating to define passage means communicating between said first annular groove and one of said expanding and contracting volume chambers, and between said second annular groove and the other of said expanding and contracting volume chambers; said housing means, said valve spool and said externally-toothed member cooperating to define a lubrication fluid chamber permitting relatively unrestricted flow therethrough; the improvement comprising:

lubrication circuit means for said forward and rearward connection means including:

(a) first check valve means disposed to permit fluid communication from said lubrication fluid chamber to said first annular groove when said second fluid port receives pressurized fluid, lubrication fluid from said gear set flowing through said rearward connection means, combining with lubrication fluid from said second annular groove, and flowing through said forward connection means to said first check valve means; and

(b) second check valve means disposed to permit fluid communication from said lubrication fluid chamber to said second annular groove when said first fluid port receives pressurized fluid, lubrication fluid from said gear set flowing through said rearward connection means to said second check valve means, and lubrication fluid from said first annular groove flowing through said forward connection means to said second check valve means.

4,362,480

ROTARY ROLLER VANE PUMP MADE OF SPECIFIC MATERIALS

Ryozo Suzuki; Sadatoshi Murakami; Tatsumi Harada; Hiroyuki Fujiwara, and Satoru Yamasaki, all of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1980, Ser. No. 136,316
Int. Cl.³ F04C *2/00, 15/00*
U.S. Cl. 418—152 **1 Claim**

1. A rotary positive displacement pump driven by a motor and comprising:

a pump base;

a pump case;

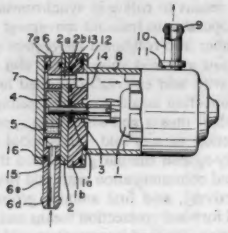
a pump housing hermetically sealed with and disposed between said pump base and said pump case and forming a pump chamber with a cylindrical side wall;

a die casted, abrasion resistance treated, zinc alloy rotor placed in said pump housing to be driven by said motor and having a plurality of grooves formed therein at the outer radial surface thereof;

a plurality of rollers each of which is inserted into one of said plurality of grooves so as to move in the radial direction

under circumferential force by the revolution of said rotor so as to contact with an inner wall of said pump housing to thereby provide a pump operating space;

intake means which further comprises means for hermetically sealing said intake port means between said pump base and said pump case and for communicating with said pump chamber wherein said rollers further comprise; fiber



reinforced polyphenylenesulfide and wherein at least said inner wall of said pump housing further comprises polytetrafluoroethylene coated aluminum alloy;

wherein said abrasion resistance treated rotor further comprises one of a copper and nickel plated rotor; and

wherein said fiber reinforced polyphenylenesulfide rollers further comprises one of carbon and glass fiber reinforced polyphenylenesulfide rollers.

4,362,481

ROTARY VANE MACHINE WITH RINGS RADIALLY CONSTRAINING THE VANES

Miria P. B. de Ayala, Calle Templarios, 1, Lerida, Spain

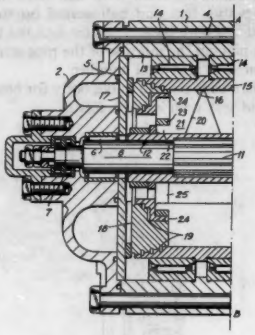
Division of Ser. No. 853,537, Nov. 21, 1977, Pat. No. 4,247,268. This application May 27, 1980, Ser. No. 153,152

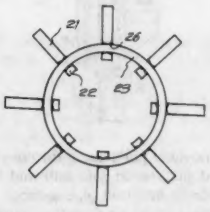
Claims priority, application Spain, Nov. 30, 1976, 453.810

Int. Cl.³ F01C *1/00, 21/00*

U.S. Cl. 418—256 **12 Claims**

1. A fluid displacement machine having a pair of spaced apart end walls and a substantially cylindrical wall extending between them which walls together form a substantially cylindrical hollow chamber, a rotor mounted for rotation within said chamber about an axis eccentric relative to the latter and being contiguous with said substantially cylindrical chamber wall along a generatrix thereof, said rotor having a pair of spaced apart end pieces sealingly engaging said end walls of said hollow chamber, said rotor also having vanes which extend axially between said end pieces, and which project substantially radially and which are displaceable in a substantially radial direction, said vanes having circumferential edges adapted to directly contact said substantially cylindrical chamber wall and thereby define working spaces which, during rotation of said rotor, move around said chamber while varying in volume, said vanes each having a lug at a radially inward position at both axially opposite ends thereof and projecting axially from said axially opposite ends of said vanes, each of said lugs having an edge, facing radially outwardly and providing an abutment surface spaced inwardly from said circumferential edge of said vane, and constraining members displaceable relative to said rotor and operatively associated with said vanes of said rotor to limit outward radial displacement thereof, said members determining limit positions for the vanes in which said circumferential edges of said vanes make only a desired degree of contact with said substantially cylindrical chamber wall, thereby preventing excessive contact pressure between said chamber wall and said circumferential edges, said constraining members including first and second rings each surrounding the lugs at a respective said end of said vanes, with said abutment surfaces bearing against the internal surfaces of said rings, characterized in that said end pieces form a part of said rotor so as to rotate coaxially therewith and are cup shaped and each has a cavity in the confronting end faces thereof so that each of said first and second rings and said lugs surrounded thereby are received in said cavity in the adjacent said end pieces, each of said end pieces surrounding the adja-





cent said ring and said lug radially outwardly of and in sliding contact with said ring, and wherein said abutment surfaces each have an axially extending apex to allow said vanes to rock relative to said rings.

4,362,482

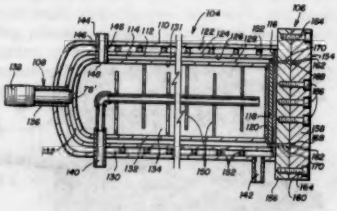
APPARATUS FOR EXTRUDING THERMOPLASTIC COMPOSITIONS

Raleigh N. Rutledge, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

Continuation of Ser. No. 110,529, Jan. 9, 1980, abandoned. This application Sep. 1, 1981, Ser. No. 298,361

Int. Cl.³ B29D *7/02;* **B29F** *3/08*

U.S. Cl. 425—4 C **14 Claims**



1. An apparatus for extruding a thermoplastic resinous composition, comprising:

an extruder for heat plastifying the thermoplastic resinous composition and forwarding same in an extrusion direction;

means, positioned downstream of said extruder and commu-

nicating with the outlet port of said extruder for cooling the heat plastified thermoplastic resinous composition exiting from said extruder to a uniform temperature desired for extrusion through an extrusion die, said cooling means including at least one enclosed flow path for conveying the heat plastified thermoplastic resinous composition from the inlet of said cooling means to the outlet of said cooling means, means for circulating a cooling medium about the entire circumference of each said resin flow path and means for maintaining a hydraulic balance between the inlet and the outlet of said cooling means across the entire cross-section of each said resin flow path; and

an extrusion die, including a die orifice positioned downstream of said cooling means and communicating with the outlet of said cooling means for receiving cooled, heat plastified thermoplastic resinous composition therefrom for extrusion through the die orifice, said cooling means comprising a substantially cylindrical vessel having three generally concentrically arranged axial passageways, wherein said enclosed flow path comprises the middle passageway and wherein said cooling medium circulating means comprises the inner and outer passageways and wherein said hydraulic balance maintaining means comprises a plurality of first apertures evenly spaced about the circumference of the inlet end of said middle passageway and a plurality of second apertures evenly spaced about the circumference of the outlet end of said middle passageway, said second apertures being sized in relationship to said first apertures so as to maintain said hydraulic balance.

4,362,483

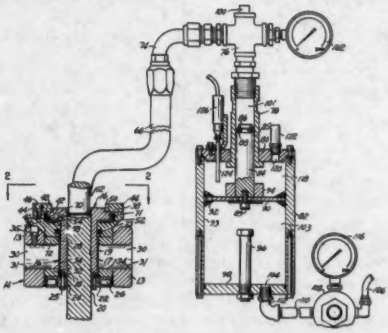
HYDRAULIC SHOCK ABSORBING MECHANISM FOR THE RAM OF POWDER COMPACTING PRESSES AND THE LIKE

Raymond P. DeSantis, Troy, Mich., assignor to PTX-Pentronix, Inc., Lincoln Park, Mich.

Filed May 28, 1981, Ser. No. 269,512

Int. Cl.³ B30B *11/02*

U.S. Cl. 425—78 **10 Claims**



1. In a press apparatus having a reciprocable ram, means for reciprocating said ram and means coupling said reciprocating means to said ram, an impact cushioning and shock absorbing device for said coupling means comprising a first intermediary member attached to said ram, a second intermediary member displaceable relative to said first intermediary member, a pair of abutment means each on one of said intermediary members limiting the travel of said first intermediary member away from said second intermediary member, means connecting said reciprocating means to said second intermediary member, a variable volume chamber between said intermediary members, means for introducing a non-compressible fluid in said variable volume chamber for normally holding said intermediary members away from each other and for holding said abutment means in engagement with each other, and means connected to said introducing means for pressurizing said noncompressible fluid, said pressurizing means comprising a first cylinder, a first piston reciprocably disposed in said first cylinder, means for introducing a compressible fluid on one side of said first piston, a rod attached to said first piston and reciprocable thereby, a second cylinder, a second piston disposed on the end of said rod and reciprocable in said second cylinder for pressurizing said noncompressible fluid in said second cylinder, wherein said first piston has an area relatively larger than the area of said second piston for transmitting the pressure of said compressible fluid to said noncompressible fluid with an amplification which is proportional to the ratio of the areas of the pistons.

4,362,484

APPARATUS FOR HOT BRIQUETTING OF FERROUS OR NON-FERROUS METALLIC PARTICLES

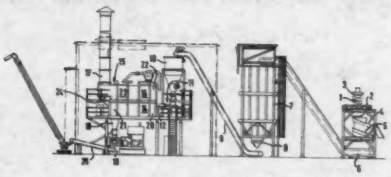
Martin A. Stephens, St. Albans, England, assignor to Ecobric Foundry Limited, London, England

Filed Aug. 24, 1981, Ser. No. 295,538

Claims priority, application United Kingdom, Nov. 7, 1980, 8035789

Int. Cl.³ B30B *11/00*; B22F *7/00, 3/12*; B27D *7/00*

U.S. Cl. 425—78 **6 Claims**



1. Hot briquetting apparatus for metallic particles comprising a furnace for heating metallic particles to the plastics range, means for supplying metallic particles to the furnace, sensing means for sensing the constituents of the combustion gases of the furnace, control means for controlling the air-to-fuel ratio of the furnace, and a briquetting press which receives heated metal particles from the furnace, said control means being connected to the output of the sensing means so as to maintain the atmosphere within the furnace as a reducing atmosphere.

4,362,485

APPARATUS FOR CONTINUOUS EXTRUSION

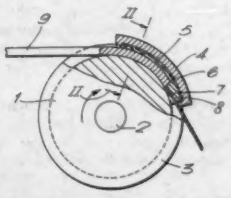
Harold K. Slater, and James Duckworth, both of Preston, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 15, 1981, Ser. No. 264,099

Claims priority, application United Kingdom, Jun. 10, 1980, 8018943

Int. Cl.³ B21C *23/21*

U.S. Cl. 425—79 **7 Claims**



1. Continuous extrusion apparatus comprising a rotatable wheel with an endless groove therein, a relatively stationary

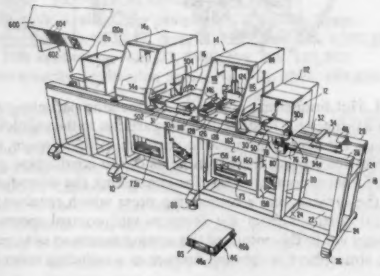
shoe member overlying part of said groove lengthwise and having a portion projecting part way into said groove, a die assembly removably and replaceably incorporated as an assembly in said shoe member so as to provide at least a part of the projecting portion thereof, a removable and replaceable abutment member formed by a removable and replaceable part of said die assembly, said abutment member projecting into and blocking said groove, removable and replaceable die means forming part of said die assembly, and fluid coolant passage means for effecting cooling of said die assembly and its parts, whereby feedstock material fed to the passageway formed by said shoe member projecting portion and that part of said groove into which it projects and with which it cooperates is caused by the force generated by friction between the groove floor and sides of the feedstock material on rotation of said wheel and by the presence of said abutment which blocks one end of said passageway, to become upset and to be extruded through said die means of said die assembly.

4,362,486

AUTOMATIC MULTILAYER CERAMIC (MLC) SCREENING MACHINE

Gordon T. Davis, Pompano Beach, Fla.; Edward H. Faulkner, Pleasant Valley, N.Y.; Angelo S. Gasparri, Coral Springs, Fla.; Robert A. Magee, Poughkeepsie, N.Y.; Lawrence P. Remsen, Stanfordville, N.Y.; Dennis L. Saylor, Lagrangeville, N.Y., and Alfred A. Stricker, Pompano Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1980, Ser. No. 194,724
Int. Cl.³ B29C *27/00*; B29E *6/00*
U.S. Cl. 425—110 **21 Claims**



1. In an automatic screening machine for screening a conductive material through a stencil mask and onto an underlying ceramic green sheet, the combination comprising:

an elongated rail structure having disposed in juxtaposition therealong and in order, a first loading station, a first screening station, a common unloading station, a second screening station, and a second loading station;

first and second carriage assemblies mounted on said rail structure for movement therealong;

means for moving said carriage assemblies along said rail structure from said loading stations through said screening stations to said common unloading station in opposite directions and selectively positioned thereat;

each carriage assembly including a green sheet support fixture;

a loading mechanism located at each loading station, said loading mechanism including a pick up and placement head for picking up a green sheet at one position on said carriage assembly and for transferring it to said support fixture;

said carriage assembly further comprising alignment means for aligning the green sheet as it is deposited on said support fixture;

a screening apparatus located at each screening station, each such screening apparatus including an assembly for fixing a stencil mask above and in alignment with a carriage assembly when at said screening station, a green sheet positioning mechanism for vertically raising said green sheet support fixture relative to said carriage assembly and into and out of a screening position in face abutment contact with said stencil mask, and an extrusion mechanism for screening conductive material through said stencil mask and onto said underlying green sheet borne by said support fixture; and

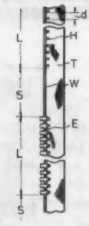
control means operatively connected to said carriage movement means, said loading mechanism and said screening apparatus for effecting sequential loading of a green sheet from a stack of such green sheets on said carriage assembly onto said green sheet support fixture and in proper alignment therewith, transport of said green sheet to said screening apparatus, screening of said green sheet and transport of said screened green sheet to said common unloading station and for effecting such operations out of phase for respective carriage assemblies such that a screened green sheet from one of said carriage assemblies is positioned at said unloading station for removal from said fixture of said one carriage assembly, while, simultaneously a second green sheet borne by the fixture of said other carriage assembly may be screened at its respective screening station, and vice versa.

4,362,487

APPARATUS FOR MANUFACTURING SLIDE FASTENER CHAINS HAVING SOLID SECTIONS

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 13, 1981, Ser. No. 292,529
Claims priority, application Japan, Aug. 30, 1980, 55-120332; Aug. 30, 1980, 55-120333
Int. Cl.³ B29D *5/00*; B29F *1/00*
U.S. Cl. 425—111 **3 Claims**



1. An apparatus for manufacturing a fastener chain having solid sections and of the type wherein the fastener chain is manufactured by providing a tape including perforated sections having holes formed along a longitudinal edge of the tape at regular intervals, said intervals being smaller than the spacing intervals of fastener element molding cavities in a fastener element injection molding machine, and solid sections in which no holes are formed, said perforated sections and solid sections alternating along the length of the tape, supplying the tape so that a perforated section thereof is placed between a stationary mold and movable mold of the injection molding machine, tensioning the tape to stretch the same, so that the spacing intervals of the holes in said perforated section of the tape are brought into agreement with the spacing intervals of the fastener element molding cavities in the molds, and then injection molding fastener elements onto said perforated section of the tape at the holes, said apparatus comprising:

an injection molding machine having a stationary mold and a movable mold movable relative thereto, said stationary and said movable molds each having molding cavities at spaced intervals therein;

means adjacent said molds to inject moldable material into said mold cavities;

a pair of spaced hollow shafts adjacent to said molds;

a pair of freely rotatable drums, each supported for rotation on a respective one of the hollow shafts;

a pair of support shafts passed through respective ones of said hollow shafts in such a manner that said support shafts may be driven rotatively and oscillated in the radial direction thereof;

a pair of sprocket wheels each having a row of peripheral teeth and fixedly secured on respective ones of said support shafts and disposed adjacent the side of said freely rotatable drums;

guide rollers cooperating with said pair of freely rotatable drums for guiding the tape into the space between said molds;

support shaft drive means for oscillating the support shafts of said sprocket wheels within said hollow shafts when a perforated section of the tape contacts and passes over the circumferential surface of a freely rotatable drum, in such a direction that causes the teeth on one of the sprocket wheels to project beyond the circumferential surface of said freely rotatable drum, and for oscillating the support shafts of said sprocket wheels within said hollow shafts, when a solid section of the tape contacts and passes over the circumferential surface of said freely rotatable drum, in such a direction that causes the teeth on said sprocket wheel to recede below the circumferential surface of said freely rotatable drum; and

tensioning means operable, when a perforated section of the tape reaches a predetermined position between said molds and the movable mold is moved toward the stationary mold to a half-closed position with said perforated section of the tape interposed therebetween, to apply tension to the tape by rotating one of said sprocket wheels reversely through a predetermined angle, thereby to bring the spacing intervals of the holes in said perforated section into agreement with the spacing intervals of the fastener element molding cavities in said molds.

4,362,488

EXTRUDER FOR CONTINUOUS MANUFACTURE OF REINFORCED TUBING, ESPECIALLY HOSE

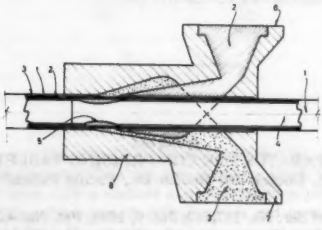
Ramon R. Casals, and Jaime R. Casals, both of Canarias, 23, Barcelona, Spain

Filed Mar. 9, 1981, Ser. No. 243,060

Claims priority, application Spain, Mar. 12, 1980, 489.439

Int. Cl.³ B29D *23/05*

U.S. Cl. 425—113 **6 Claims**



1. An extruder for continuously manufacturing of reinforced tubing, especially hose, consisting of a tubular fabric reinforcement, an outer tubular layer of compounded polymeric material applied to and bonded to the outer surface of the tubular fabric reinforcement and an inner tubular layer of compounded polymeric material applied to and bonded to the inner surface of the tubular fabric reinforcement, said extruder comprising an elongated extruder head having a plurality of tubular means arranged to form two main annular passages extending in longitudinal direction of the head and each having an inlet end and an outlet end, one of said main annular passages being at least in part surrounded by the other main annular passage, said one annular passage serving for the flow of compounded polymeric material therethrough forming said inner tubular layer and the other of said annular passages serving for the flow of compounded polymeric material therethrough forming said outer tubular layer, said outlet end of said one annular passage being rearwardly displaced, as considered in the direction of flow of the compounded polymeric material, from the outlet end of said other annular passage; a first hopper communicating with the inlet end of said one annular passage for feeding compounded polymeric material for forming said inner tubular layer into said one annular passage; a second hopper communicating with the inlet end of said other annular passage for feeding compounded polymeric material for forming said outer tubular layer into said other annular passage; said extruder head being further provided with a central passage of circular cross section therethrough; and a mandrel of circular cross section of a diameter smaller than that of said central passage extending coaxially through said central passage to form an annular gap with the latter for feeding the tubular fabric reinforcement through said annular gap, said outlet end of said one annular passage and said outlet end of said other annular passage terminate both at the outer periphery of said annular gap, said mandrel being provided in the region of the outlet end of said one annular passage with an annular neck at least partly overlapping said outlet end of said one annular passage.

4,362,489

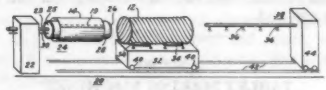
EXPANDABLE MANDREL APPARATUS FOR MANUFACTURING SMOOTH-LINED CORRUGATED PIPE

Bernard J. Bast, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 166,426, Jul. 7, 1980, abandoned. This application May 18, 1981, Ser. No. 264,364

Int. Cl.³ B29C *6/00*

U.S. Cl. 425—127 **2 Claims**



1. Apparatus for producing a smooth-lined corrugated pipe having a plastic foam mixture filling the voids created by the corrugations of the pipe and bonded to the internal surface of the pipe, and a plastic sheet liner bonded to the plastic foam mixture, which apparatus comprises:

(a) means for applying a plastic foam mixture to the internal surface of the corrugated pipe,

(b) means for inserting an expandable mandrel, having mounted thereon said sheet liner in the form of an expandable cylinder, into the corrugated pipe after said means of paragraph (a) has applied said plastic foam mixture to the internal surface of the corrugated pipe but before said plastic foam mixture hardens,

(c) means for expanding said expandable mandrel to press said sheet liner against said plastic foam mixture,

(d) means for maintaining said sheet liner against said plastic foam mixture until said plastic foam mixture has solidified and is bonded to the internal surface of said corrugated pipe and said sheet liner is bonded to said plastic foam mixture, and

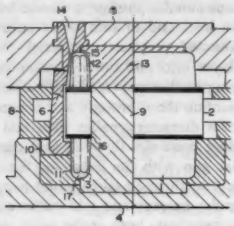
(e) means to collapse said expandable mandrel and remove it from and thereby provide said smooth-lined corrugated pipe.

4,362,490

MOLDING APPARATUS FOR STATOR OF ROTARY ELECTRIC MACHINE

Yoshiro Machida, Chiba; Kenichi Nakamura, Sakura; Takao Mifune, Ichikawa, and Masayuki Sugishima, Sakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,169
Claims priority, application Japan, Jul. 11, 1980, 55/93938
Int. Cl.³ B29C 6/00
U.S. Cl. 425—128 7 Claims



1. A molding apparatus for a stator of an electric rotary machine comprising:

a first mold member enclosing one coil end of the stator including a stator core and a coil wound thereon with a clearance therebetween and positioned against one end surface of the stator core disposed outwardly of said one coil end;

a second mold member set on the inner periphery of the stator core and enclosing the other coil end of the stator with a clearance therebetween while being positioned against other end surface of the stator core disposed outwardly of said the other coil end; and

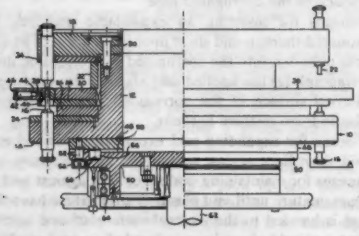
at least one runner formed on said second mold member for communicating a first space formed between said first mold member and said one coil end with a second space formed between said second mold member and said the other coil end.

4,362,491

TABLET MAKING MACHINES

David Livingstone, Royston, England, assignor to Ed Frogerais SA, France

Filed Sep. 25, 1981, Ser. No. 305,609
Claims priority, application United Kingdom, Feb. 5, 1981, 8103586
Int. Cl.³ B28B 17/00; B30B 11/08
U.S. Cl. 425—186 10 Claims



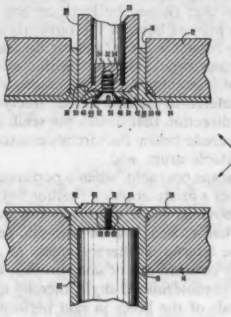
1. In a tablet making machine, a rotor one end of which is adapted to be detachably secured to a rotatable member of the machine so that the rotor rotates with the rotatable member in use of the machine; the configuration of the rotor being such that when it is detached from the rotatable member the rotor can be removed from the machine by generally horizontal sliding movement.

4,362,492

APPARATUS FOR COMPRESSION MOLDING RECORDED DISCS

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,856
Int. Cl.³ B29D 17/00
U.S. Cl. 425—309 9 Claims



1. In an apparatus for molding a recorded disc which includes a pair of mold plates adapted to form therebetween a disc mold cavity, a center hole forming pin movable in one of the mold plates toward and away from the other mold plate at the center of the mold cavity and a center plate in the other mold plate at the center of the mold cavity with each of the center hole forming pin and center plate having surfaces which mate to form the center hole in the disc, the improvement comprising:

the portion of at least one of the center hole forming pin or center plate having its mating surface removably secured to its respective part and being of a material harder than the material of its respective part.

4,362,493

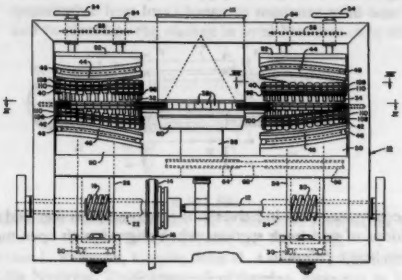
APPARATUS FOR COMPRESSING TABLETS

Wallace A. Doepel, 226 Bellino Dr., Pacific Palisades, Calif. 90272

Division of Ser. No. 167,267, Jul. 9, 1980, Pat. No. 4,292,017.
This application Apr. 27, 1981, Ser. No. 257,922
The portion of the term of this patent subsequent to Sep. 29, 1998, has been disclaimed.
Int. Cl.³ B30B 11/08, 15/00
U.S. Cl. 425—345 5 Claims

1. In apparatus for compressing material into tablets, turntable means having means on its periphery for receiving dies which are to be filled with product material prior to compression, dies positioned in at least some of said receiving means, and apparatus for evacuating said dies as they are filled with said product, said apparatus for evacuating comprising a filter

beneath said dies carried on said turntable and having a filtering surface in contact with the bottoms of the dies, said filter-



ing surface preventing substantial product material from passing out of the dies, and means for evacuating the filter cavity.

4,362,494

AUTOMATIC PRESS

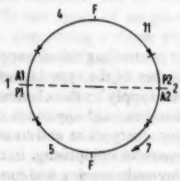
Horst Schreiner, and Bernhard Rothkegel, both of Nuremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 174,905, Aug. 4, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 310,986

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932372

Int. Cl.³ B30B *11/10*; B29C *3/00*; B30B *11/06*

U.S. Cl. 425—345 **6 Claims**



1. In an automatic press for the manufacture of molded bodies from materials in powder form, in which a rotatable circular table with a vertical axis of rotation is provided on which filling devices with filling vessels and press tools are arranged at a uniform pitch, the improvement comprising: at least two work positions being provided on the circular table at a predetermined spacing of at least 120° from each other; means for carrying out, at each work position, while said press table is stationary, a respective pressing process for pressing the powder and a respective ejecting process for ejecting the finished molded body; and respective filling devices arranged between the work positions in such a manner that the filling takes place while the table is moving and that the filling vessel of each filling device covers a wide angular region of the circular table.

4,362,495

EXTRUSION DEVICE FOR FORMING A HONEYCOMB STRUCTURE

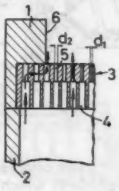
Junichiro Naito, Toyokawa; Shinichi Yamamoto, Takahama; Zituo Suzuki, Aichi, and Mitsuru Asano, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 10, 1980, Ser. No. 214,984

Claims priority, application Japan, Dec. 12, 1979, 54/162103

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—376 A **9 Claims**



1. An extrusion device for forming a honeycomb structure provided with a large number of axially extending open passages which are separated by thin wall, out of an extrudable material, comprising:

a die provided with a large number of disconnected feed passageways which are formed on an extrudable material inlet side thereof in the axial direction thereof, and a large number of interconnected grid-shaped extrusion slots which are formed on an extrudable material outlet side thereof and communicated with said feed passageways; and

a cylindrical die mask disposed on said outlet side and having a central aperture coaxial with said die,

said mask being disposed to cover an outer ring of extrusion slots with said aperture leaving uncovered an inner circular area of extrusion slots,

the uncovered extrusion slots in the outer peripheral portion of said inner circular area having a width larger than those of the central portion of said circular area,

the arrangement being such that extrudable material fed to the covered outer ring of extrusion slots is caused to flow laterally to the said uncovered wider extrusion slots via the said interconnection thereof and axially outwardly through said wider slots to aid in providing a continuous homogenous honeycomb structure.

4,362,496

APPARATUS FOR MAKING PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

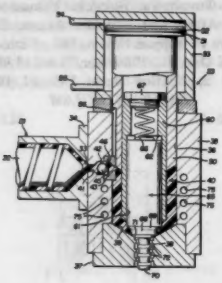
Division of Ser. No. 164,664, Jun. 30, 1980, Pat. No. 4,323,340, which is a division of Ser. No. 854,555, Nov. 25, 1977, Pat. No. 4,305,902, which is a continuation of Ser. No. 670,936, Mar. 26, 1976, abandoned, which is a continuation of Ser. No. 461,361, Apr. 16, 1974, abandoned. This application Aug. 11, 1981, Ser. No. 291,714

Int. Cl.³ B29F *3/08, 1/08*

U.S. Cl. 425—379 R **1 Claim**

1. In an apparatus for making an oriented thermoplastic article, an accumulator for containing a body of thermoplastic material of a volume at least sufficient to form the article, means for adjusting the temperature of the body of said material while in said accumulator to a temperature conducive to orientation, means defining an orifice, said accumulator being spaced from, and communicating with, said orifice by means defining a passageway, means for advancing material under pressure from said body in said accumulator toward and through said orifice communicating with said accumulator via said passageway, means in said passageway intermediate said accumulator and said orifice for shearing said material in a

non-linear shear pattern to multi-directionally orient the material prior to its issuance from said orifice, and means for chilling said multi-directionally oriented material exteriorly of said orifice to form an article in which the material is multi-directionally oriented.

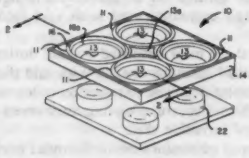


4,362,497

FOOD PRESS FORM

Igor Lifshitz, 1635 N. Martel Ave., Los Angeles, Calif. 90036

Filed Aug. 14, 1981, Ser. No. 293,513
Int. Cl.³ A21C *11/10*; B29C *1/00*
U.S. Cl. 425—510 8 Claims



1. A food form in combination, comprising:

multiple separate, planar food product molds each having a shape appearing in plan view as a regular planar geometric figure, each mold having tapered mold walls and being free of a base wall, each mold having a top face and a cutting-edge knife edge terminus disposed around said top face, conforming to said shape, a holding tray shaped and sized to hold and secure said multiple food product molds in said tray, and,

a one-piece pusher member having plural projections each being sized and shaped to cooperate with one of said multiple molds and to be intruded into one of said molds and to eject the molded food product therefrom.

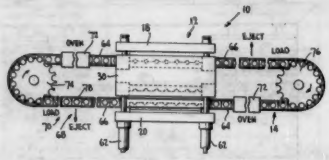
4,362,498

BLOW MOLDING CLAMP ASSEMBLY

Ieuan L. Harry; Suppayan M. Krishnakumar, both of Nashua; Walter R. Jolly, Merrimack; Martin H. Beck, Brookline, all of N.H., and John F. E. Pocock, Neu-Isenburg, Fed. Rep. of Germany, assignors to The Continental Group, Inc., Stamford, Conn.

Filed Jul. 23, 1981, Ser. No. 286,401
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—526 14 Claims

1. A blow molding clamp assembly comprising fixed remote mold half sets, companion mold half sets mounted as a unit and for movement for selected cooperation with a respective one of said fixed mold half sets wherein when one set of said mold halves is closed the other set of said mold halves is open, said clamp assembly including a track section associated with each set of mold halves for receiving preform carriers, means mounting each of said track sections for movement between a position generally centered relative to a respective set of mold halves when open and a position centered relative to said respective sets of mold halves in their closed positions, and the positions of said track sections when aligned with open mold halves being different.

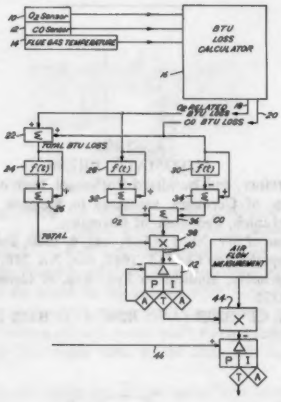


4,362,499

COMBUSTION CONTROL SYSTEM AND METHOD

Stanton K. Nethery, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Dec. 29, 1980, Ser. No. 220,694
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—12 4 Claims



1. Apparatus for controlling the air supply for combustion in a combustion chamber of the type including a fuel supply to the chamber, an air supply to the chamber and a flue gas exhaust from the chamber, said apparatus designed to mininize combustion reaction energy loss and to maximize combustion efficiency, said apparatus comprising, in combination:

means for continuously sensing and monitoring the concentration of oxygen in the flue gas;

means for continuously sensing and monitoring the concentration of carbon monoxide in the flue gas;

means for continuously sensing and monitoring temperature of the flue gas;

means for calculating sensible heat loss due to unreacted oxygen and the other excessive air components associated therewith in the flue gas using the sensed and monitored temperature and concentration of oxygen in the flue gas;

means for calculating the sensible and reactive heat loss due to unreacted carbon monoxide in the flue gas using the sensed and monitored temperature and concentration of carbon monoxide in the flue gas;

means for summing the heat losses to determine a total heat loss;

means for determining the sign of the quantitative change in heat loss for each calculated heat loss and the total heat

loss during a time increment between serial calculations of each heat loss;

means for controlling air supply in response to the signs of quantitative heat loss change to minimize total heat loss and to eliminate the change in total heat loss over time.

4,362,500

UNIT FOR COMBUSTION OF PROCESS EXHAUST GAS AND PRODUCTION OF HOT AIR

Torsten L. Eriksson, Vargön; John O. Andersson, Sjuntorp, and Olle Nyström, Trollhättan, all of Sweden, assignors to Volvo Flygmotor AB, Sweden

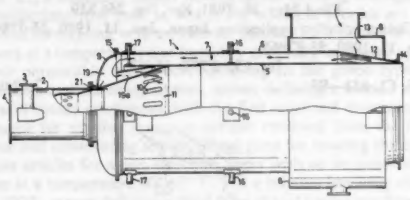
PCT No. PCT/SE79/00164, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 16, 1980, PCT Pub. No. WO80/00484, PCT Pub. Date Mar. 20, 1980

PCT Filed Jul. 31, 1979, Ser. No. 209,706

Claims priority, application Sweden, Aug. 30, 1978, 7809131

Int. Cl.³ F23G 7/06

U.S. Cl. 431—352 5 Claims



1. Unit for combustion of nonexplosive process gases containing small amounts of organic compounds and for production of hot air directly usable for drying and heating, or for the like uses, the unit comprising a combustion chamber comprised of metal, a burner for burning supplementary fuel, the burner being located at one end of the combustion chamber and outside of the combustion chamber, and the burner being adaptable for burning different types of supplementary fuel; the combustion chamber comprising a flame pipe having a front portion at the burner and including an inlet cone for the flame from the burner, the inlet cone being located at the one end of the combustion chamber at the front portion and widening away from the one end; an outer jacket extending around, at a distance from and concentric to the flame pipe for conducting the process gas into the space defined between the flame pipe and the outer jacket, whereby the process gas moving through the space may provide convective cooling of the wall of the flame pipe, the flame pipe having an outlet remote from the inlet cone, an intake for the process gas to the space, the intake being located near the outlet of the flame pipe, an annular chamber located around the outside of the inlet cone and inside the outer jacket for redirecting the process gas in a direction back toward the intake to the space, and an extension of the annular chamber between the front end of the flame pipe and the inlet cone into which the process gas is redirected for cooling the outside of the inlet cone, an inlet slot for process gas from the annular chamber into the inlet cone, the inlet slot being located at the front portion of the flame pipe and being for directing process gas for blowing over and for film-cooling of the inside of the inlet cone, outlet holes for the process gas from the annular chamber extension and located at the wider rear end of the inlet cone for mixing process gas into the flame in the inlet cone and combustion of the pollutant.

4,362,501

PROCESS AND ARRANGEMENT FOR THE ZONAL HEATING OR COOLING OF ELONGATE TREATMENT MEMBERS

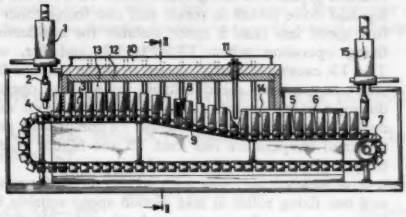
Jean-Marie Welter, Aachen, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 230,111

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003429

Int. Cl.³ F27B 9/00; F27D 3/00; H05B 3/62

U.S. Cl. 432—11 24 Claims



11. An apparatus for the continual heat treatment of a filling contained within a crucible, said apparatus comprising:

a. an oven having a heating means disposed therein, said heating means extending parallel to the horizontal axis of said oven whereby a horizontal heating zone is formed;

b. at least one endless conveyor disposed within said oven, said conveyor having at least a portion thereof inclined relative to the horizontal axis of said heating means, said conveyor having crucible holders affixed thereto and is positioned substantially above said heating means, said conveyor further having a driving means;

c. means for placing crucibles in said crucible holders;

d. means for removing said crucibles from said conveyor disposed above said heating means.

4,362,502

FIXING AND HEATING DEVICE FOR ELECTROSTATIC COPYING APPARATUS

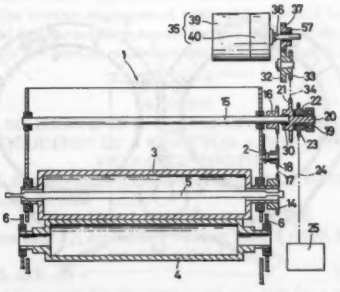
Minoru Motomura, Nara; Kiyoshi Shibata, Osaka, and Toshio Watanabe, Takatsuki, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 158,381, Jun. 11, 1980, Pat. No. 4,316,719. This application Sep. 2, 1981, Ser. No. 298,771

Claims priority, application Japan, Jun. 15, 1979, 54-75886; Jun. 15, 1979, 54-75887

Int. Cl.³ G03G 15/00; F27B 9/28

U.S. Cl. 432—60 1 Claim



1. A fixing and heating device for fixing a toner image on a

copy paper sheet in an electrostratic copying apparatus, said device comprising:

a pair of fixing rollers adapted to pass therebetween a copy paper sheet having thereon a toner image;

heating means for heating a first said fixing roller such that the surface thereof is at a temperature T3 suitable for fixing;

drive means for rotating at least one of said fixing rollers;

temperature detecting means for detecting the actual temperature T1 of said surface of said first fixing roller;

control means, operable in response to the output of said temperature detecting means and operably connected to said driving means, for causing said drive means to stop rotation of said one fixing roller when $T1<T2$, for causing said drive means to rotate said one fixing roller at a first speed less than a speed suitable for conducting a fixing operation when $T2 \leqq T1<T3$, and for, when $T1=T3$, causing said drive means to rotate said one fixing roller at a second speed suitable for a fixing operation during a fixing operation and at said first speed except during a fixing operation, wherein T2 comprises a predetermined temperature less than T3 and higher than the temperature at which the toner begins to soften;

said drive means comprising main driving means for rotating said one fixing roller at said second speed suitable for a fixing operation, first one-way clutch means operatively connected between said main driving means and said one fixing roller for transmitting a rotational driving force from said main driving means to said one fixing roller, low speed driving means for rotating said one fixing roller at said first speed, and second one-way clutch means operatively connected between said low speed driving means and said one fixing roller for transmitting a rotational driving force from said low speed driving means to said one fixing roller; and

said control means comprising means for, when $T1<T2$, rendering both said main driving means and said low speed driving means inoperative, for, when $T2 \leqq T1<T3$ and when $T1=T3$ except during a fixing operation, rendering said main driving means inoperative and rendering said low speed driving means operative, and for, when $T1=T3$ and during a fixing operation, rendering said main driving means operative and rendering said low speed driving means inoperative.

4,362,503

PLANETARY COOLER

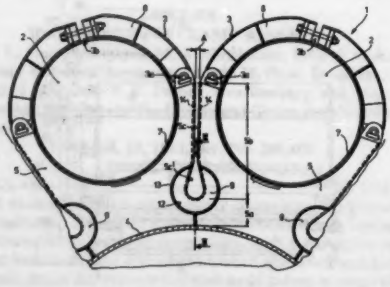
Karl Eiring, Oelde, and Bernhard Loffler, Warendorf, both of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,538

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024802

Int. Cl.³ F27D *15/02*; F27B *7/02*

U.S. Cl. 432—80 **8 Claims**



8. In a planetary cooler having a plurality of cooling tubes arranged around the periphery of a revolving tube furnace having a mantle, and a radially extending, circumferentially spaced bearing support for each of said tubes, each of said bearing supports comprising a pair of axially spaced plates fixed at their radially inner ends to said mantle and to the corresponding portions of the circumferentially adjacent supports, circumferentially adjacent ones of said plates being spaced from each other radially outwardly of said portions by a clearance, and each of said plates having an opening therein at the radially inner end of said clearance, the improvement comprising an insert fixed to and extending between each circumferentially adjacent pair of said plates, each of said inserts comprising a pair of spaced flanges accommodated in the openings of axially adjacent ones of said plates and fixed to the latter, each of said flanges having an opening therein in communication with said clearance, said insert including a web joining said flanges.

4,362,504

APPARATUS FOR MANUFACTURING A RAPIDLY COOLED SOLIDIFIED GAS HAVING ROTATING COOLING DRUM

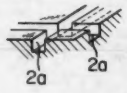
Shuji Kajikawa; Kazuo Kanai; Haruo Ito; Yoshihisa Hirata; Jiro Konishi; Yasuto Takasaki; Kenji Ohkoshi, and Yoshinobu Yanagida, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1981, Ser. No. 266,819

Claims priority, application Japan, Jun. 11, 1980, 55-77864; Jun. 11, 1980, 55-77865

Int. Cl.³ F27D *15/02*

U.S. Cl. 432—83 **7 Claims**



1. An apparatus for manufacturing a rapidly cooled solidified slag, which comprises:

at least one rotating cooling drum having a peripheral surface, said cooling drum having a horizontal center axis and being cooled by a cooling medium;

driving means for rotating said cooling drum around said horizontal center axis thereof;

means defining a slag sump at the rising position of said peripheral surface of said cooling drum, and including means for depositing molten slag onto said peripheral surface of said cooling drum, part of said means defining said slag sump comprising part of said peripheral surface of said cooling drum;

a scraper provided so as to be in contact with the lower half of said peripheral surface of said cooling drum for peeling off solidified slag from said cooling drum; and,

a slag feeding means, arranged above said cooling drum, for pouring said molten slag into said slag sump;

whereby said molten slag poured into said slag sump is deposited onto said peripheral surface of said cooling drum, rapidly cooled through heat exchange with said cooling medium according to the rotation of said cooling drum to become a solidified slag, and peeled off from said peripheral surface of said cooling drum by said scraper; and

said peripheral surface of said cooling drum comprises means defining surface irregularities over substantially the entire surface of said peripheral surface, said surface irregularities including at least one of a plurality of grooves formed in said peripheral surface, a plurality of projections on said peripheral surface, a plurality of recesses in said peripheral surface and a surface roughness of said

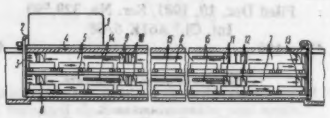
peripheral surface expressed by a maximum height within the range of from 12 to 500 μm.

4,362,505

TREATMENT OF ARTICLES, FOR EXAMPLE, CONCRETE ARTICLES, AND AN APPARATUS FOR ACCOMPLISHING SAME

Vilya V. Bubelo, ulitsa Avdeeva, 4, kv. 110; Vitaly M. Timofeev, ulitsa Avdeeva, 67, kv. 4; Vladimir I. Ganzhara, ulitsa Avdeeva, 4, kv. 77, all of Tselinograd, and Raisa M. Froze, Chelyabinskaya ulitsa, 27, kv. 128, Moscow, all of U.S.S.R.

Filed Oct. 20, 1980, Ser. No. 198,923
Int. Cl.³ F27B 9/00
U.S. Cl. 432—148 4 Claims



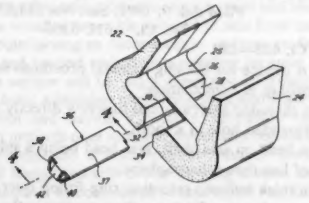
1. Apparatus for treatment of concrete articles having a pre-drying chamber for receiving concrete articles and drying thereof by blowing of air thereon at a temperature of 40° C. to 100° C., a treatment tunnel having means defining a temperature-increase first zone in which the concrete articles are received for treating with a steam-air mixture for a period of 1–6 hours at a temperature and humidity gradually increased up to their permissible values corresponding to the given type of concrete articles being treated, means defining a second zone in said tunnel contiguous with the first zone and downstream thereof for treating concrete articles received from the first zone and constituting an isothermal zone for treating the concrete articles for a period of 2–6 hours with an air-steam mixture at a temperature 60°–95° C. and a relative humidity close to 100%, means defining a third zone in said tunnel contiguous with the second zone and constituting a cooling zone for cooling concrete articles received from the second zone by blowing slightly cooling air thereon for a period of 0.3 to 1.5 hours at a relative humidity of 35–95%, and for each of said first and second zones respective means therein for introducing an air-steam mixture for effecting the corresponding treatment therein.

4,362,506

SINGLE LOCATION INSULATOR LOCKING DEVICE

Frank Campbell, Jr., Houston, Tex., assignor to Fulbright & Jaworski, Houston, Tex.

Filed Apr. 13, 1981, Ser. No. 253,463
Int. Cl.³ F27D 3/02; D03D 49/26
U.S. Cl. 432—234 6 Claims



1. A combination of a releasably securable, self-supporting insulator covering at least a portion of the exterior of a pipe comprising:

(a) A pair of spaced-apart, opposed insulator segments;

(b) Each segment including an interior surface substantially conforming to a portion of the exterior of the pipe, said interior surface terminating at one end in a locking surface;

(c) The locking surfaces of the spaced-apart, opposed insulator segments converging in a direction away from the pipe;

(d) An elongated, resilient brace secured to and transversely connecting the spaced-apart insulator segments and maintaining said insulator segments in spaced-apart relationship; and

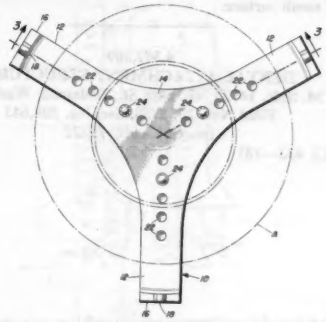
(e) A single means located within the spaced-apart, opposed locking surfaces and the transverse resilient brace to lock the upper locking surfaces apart from one another and to urge the interior surfaces of the insulator segments into intimate contact with at least a portion of the exterior of the pipe so that the insulator is secured around said pipe.

4,362,507

SUPPORT FOR CERAMIC WARE ARTICLE DURING FIRING

Paul Antonucci, Alden, N.Y., assignor to Buffalo China, Inc., Buffalo, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,270
Int. Cl.³ F27D 5/00
U.S. Cl. 432—259 5 Claims



1. A refractory setter device for supporting glazed ceramic ware within a firing kiln comprising:

an open spider providing an upwardly facing surface above which a ceramic ware article is to be supported within the firing kiln;

a plurality of conical pockets opening outwardly of and disposed within said upwardly facing surface, at least one said conical pocket being disposed in each of three radial locations relative to the center of said spider; and

a spherical ball engaged within one said conical pocket at each of said three radial locations whereby a ceramic ware article when supported on said setter device has three point contact engagement with said spherical balls, each said ball having the exterior thereof in limited line contact with the conical pocket within which the ball is engaged.

4,362,508

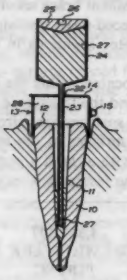
METHOD AND AN APPARATUS FOR THE PRODUCTION OF A CORE FOR A ROOT-FILLED PREPARED TOOTH

Inge R. Söderström, Mell. Stenbocksgatan 45 a, S-252 42 Helsingborg, Sweden

Filed Mar. 3, 1981, Ser. No. 240,095
Claims priority, application Sweden, Mar. 5, 1980, 8001699
Int. Cl.³ A61C 5/02
U.S. Cl. 433—81 14 Claims

1. An apparatus for the production of a cast for a mould for a core for a root-filled prepared tooth, comprising: an injection needle, a syringe cylinder connected to an inlet end of the

injection needle, a piston movable in said cylinder for injection of an impression material in said cylinder into a reamed root canal of a tooth prepared for root filling, to make a cast thereof, the injection needle forming a reinforcing element



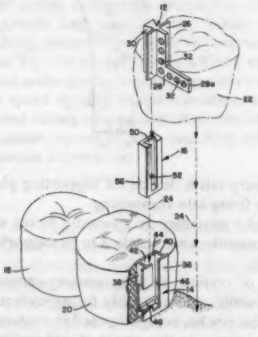
remaining in the impression material during and after solidification, and a mould formed as a guide for the reinforcing element and adapted to be applied to the prepared tooth for taking a simultaneous cast of the root canal and the free prepared tooth surface.

4,362,509

DENTAL ATTACHMENT STRUCTURE

Josef M. Sulc, 14720 NE. 64th St., Redmond, Wash. 98052

Filed Nov. 20, 1980, Ser. No. 208,643
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—181 **29 Claims**



1. Dental structure for removable mounting of a dental appliance in the form of a partial denture, overdenture, bridge or similar dental appliance in an oral cavity comprising:

(a) a male member including an extension, means on said member for mounting the same permanently either on an abutment within said oral cavity or said dental appliance to be removably mounted in said oral cavity;

(b) a female member including a housing and a pocket into which said extension is adapted to be telescopically received when said dental structure is mounted in said oral cavity and from which said extension is retracted when said dental structure is removed from said oral cavity, said famale member adapted to be permanently mounted to the other of said abutment and dental appliance; and

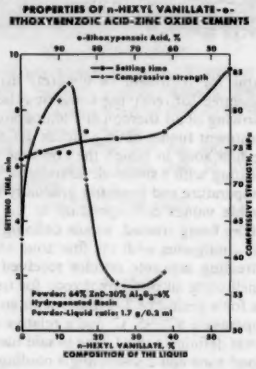
(c) an element including a body of resilient, non-metallic material, said element adapted to be mounted either by said extension of said male member or in said pocket of said female member whereby when said members are telescopically received said element will be disposed between and in surface-to-surface contact with both said extension and the wall of said pocket both to cushion said member and provide a tight fitting telescopic engagement and prevent any frictional contact of members when received and retracted.

4,362,510

CEMENTITIOUS DENTAL COMPOSITIONS WHICH DO NOT INHIBIT POLYMERIZATION

Gerhard M. Brauer, Bethesda; Harold Argentar, Rockville, and Jeffrey W. Stansbury, College Park, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Dec. 10, 1981, Ser. No. 329,590
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—199 **46 Claims**



1. A cementitious dental composition comprising a solid phase which includes a metal oxide or hydroxide of tin or a Group II metal and a liquid phase which includes a chelating compound, said chelating compound comprising an ester of a vanillic acid moiety, said ester being the product of a reaction of an alcohol and at least one of a member selected from the group consisting of vanillic acid, isomers of vanillic acid, and homologs of vanillic acid.

4,362,511

J BOLT

John Jacklich, 102 Western Ct., Santa Cruz, Calif. 95060

Filed Jul. 9, 1981, Ser. No. 281,574
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—220 **5 Claims**

1. A device for holding a dental prosthesis such as a crown comprising in combination:

a. a threaded shaft adapted to screw directly into a prepared threaded hole in a tooth,

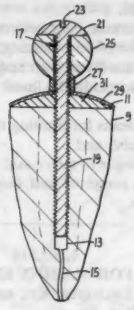
b. a head on said shaft, said head being a spherical segment of less than a hemisphere,

c. a thick bulbous retention ring fitting over said shaft, said retention ring having a diameter larger than said head and having a top surface complimentary to the bottom surface of said head,

d. a shim mounted on said shaft under said retention ring said shim having a smaller diameter than said head,

e. a coping dish having a concave side and a convex side and having a diameter larger than said head mounted on said threaded shaft,

f. said threaded shaft extending through said retension ring, shim, and coping dish whereby the concave side of said



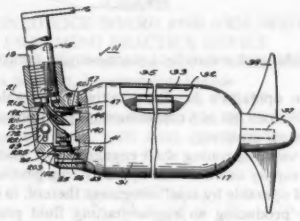
coping dish can lie on the surface of a prepared tooth with the threaded shaft extending into said tooth.

4,362,512

ELECTRIC OUTBOARD MOTOR CONSTRUCTION

Wallace R. Johnson, Mundelein, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 25, 1980, Ser. No. 190,588
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—6 **8 Claims**



1. An outboard motor comprising a shaft having a lower end and a hollow interior, means for connecting said shaft to a boat with said shaft extending in a generally vertical direction, a housing including a motor section incorporating an electric motor and supporting a propeller, an adaptor section connected to said shaft lower end and including an interior recess communicating with said hollow interior of said shaft, located in axially spaced relation from said motor, and being defined by a radial surface, a bore extending from said radial surface, and a counterbore extending from said bore, and means for connecting together said motor housing section and said adaptor section, a winding assembly located in said bore and comprising a bobbin having an outer surface, an inner surface, and spaced first and second ends, and a winding location on said outer bobbin surface and having a dimension affording a close fit with said bore, a member interfitting with said inner surface of said bobbin and having a radially outwardly extending flange which projects over said first end of said bobbin and into said counterbore, and a compressible member sandwiched between said flange and said motor housing section and compressed consequent to connection of said motor section to said adaptor section, whereby to force said flange against said first end of said bobbin so as to seat said second end of said bobbin tightly against said radial surface of said housing.

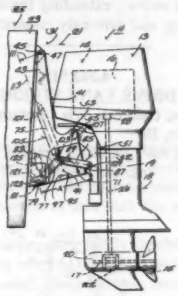
3. A control circuit for a permanent magnet, direct current motor incorporated in an outboard motor, said circuit comprising a source of direct current, a permanent magnet motor including an armature winding having opposed terminals, and control means including a first resistor connected to said direct current source, a second resistor, a thermal cut-out switch connected between said one armature winding terminal and each of said first and second resistors, a shunt lead connected to said one armature winding terminal independently of said thermal cut-out switch, and a speed control switch connected to said direct current source and selectively operable between a first position connecting said direct current source to said shunt lead in parallel with said first resistor and disconnected from said second resistor, a second position connecting said direct current source to said second resistor in parallel with said first resistor and disconnected from said shunt lead, and a third position disconnected from both of said shunt lead and said second resistor.

4,362,513

DUAL PIVOT OUTBOARD MOTOR WITH TRIM AND TILT TOGGLE LINKAGE

Charles B. Hall, Ingleside; Edward D. McBride, Waukegan, both of Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 28, 1980, Ser. No. 173,161
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—61 **9 Claims**



1. A marine propulsion device comprising a bracket adapted means adapted to be connected to a boat transom, a propulsion unit including a power head and having, at the lower end thereof, a rotatably mounted propeller, means connecting said propulsion unit to said transom bracket means for pivotal movement of said propulsion unit relative to said transom bracket means about a first axis which is horizontal when said transom bracket means is boat mounted, and between a lower position with said propeller submerged in the water and a full tilt position with said propeller substantially out of the water; and for steering movement of said propulsion unit relative to said transom bracket means about a second axis which is transverse to said first axis, and movement effecting means including a toggle linkage connected to said propulsion unit and an extensible link connected between said transom bracket means and said toggle linkage for pivotally displacing said propulsion unit about said first axis between said lower position with said propeller submerged in the water and said full tilt position with said propeller substantially out of the water.

4,362,514

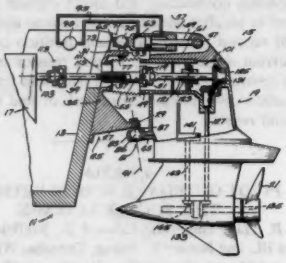
HIGH PERFORMANCE STERN DRIVE UNIT

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 4, 1980, Ser. No. 183,941
Int. Cl.³ B63H *5/13*
U.S. Cl. 440—61 **17 Claims**

1. A marine propulsion device comprising a barcket adapted to be fixed to a boat transom and having an upper portion and a lower portion, a propulsion leg including a rotatably

mounted propeller, a first ball joint coupling connecting said propulsion leg and one of said bracket portions, an extensible and contractable rigid link having first and second ends, means pivotally connecting said first end of said rigid link to said propulsion leg about an axis which is generally horizontal



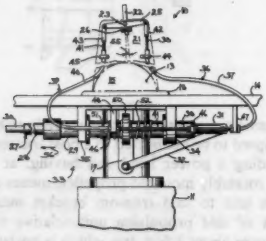
when said bracket is boat mounted, a second ball joint coupling connecting said second end of said rigid link to the other of said bracket portions, and a drive train adapted to be connected to a prime mover, extending through said bracket and said propulsion leg, and drivingly connected to said propeller.

4,362,515

MARINE DRIVE VANE STEERING SYSTEM

Russell F. Ginnow, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 10, 1980, Ser. No. 139,001
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—62 **6 Claims**



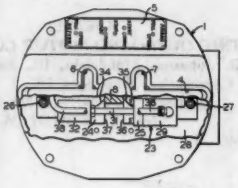
1. In a marine drive for mounting in a boat,
(A) an engine,
(B) a steerable drive unit connected to said engine,
(C) transom support means for attachment of said marine drive to the boat,
(D) a steering arm fixed to said drive unit for steering said marine drive,
(E) a lower gearbox attached to said drive unit,
(F) a horizontal propeller shaft positioned in said gearbox,
(G) a propeller fixed to said propeller shaft for rotation with said propeller shaft,
(H) an anti-cavitation plate having a substantially horizontal surface positioned above said propeller,
(I) a steering means connected to move said steering arm said steering means including a push-pull steering cable having an inner core supported in an outer casing,
(J) a vane vertically positioned behind said propeller on a substantially vertical pivot shaft rotatably supported in said anti-cavitation plate,
(K) vane rotating means connected to rotate said vane on said pivot shaft upon an initial movement of said steering means, said vane rotating means having an inner core supported by an outer casing, wherein the improvement comprises a steering system including:
(a) a guide tube fixed to the end of the outer casing of said steering cable,
(b) a link rod connecting between said steering arm and the inner core of said steering cable,
(c) a guide means fixed with respect to said transom support means to guide the linear movement of said guide tube,
(d) a limiting means for limiting the range of movement of said guide tube, and
(e) restoring means to move said steerable drive unit from the extreme range of said range of movement of said steering arm.

4,362,516

INHIBIT LOCKS FOR MARINE ENGINE CONTROLLER

Michael D. Lyons, Lexington, Ky., assignor to American Standard Inc., Lexington, Ky.

Filed May 8, 1981, Ser. No. 262,563
Int. Cl.³ B63H *21/12*
U.S. Cl. 440—85 **3 Claims**



1. Inhibit lock means for a marine engine controller comprising:
(a) an operator's handle selectively operable in opposite directions out of a central neutral position to a plurality of control positions;
(b) a valve-operating shaft engageable by said handle;
(c) a supply valve device operably engageable by said shaft and operable by axial movement thereof, in one direction, for producing an engine-starting fluid pressure control impulse;
(d) spring biased latch means for locking said operator's handle in its said neutral position;
(e) a cylinder device operably connected to said latch means and effective, when pressurized at will by the operator, for releasing said latch means and consequently the operator's handle for operation thereof to a selected control position; and
(f) a piston device operable responsively to a pressure impulse, signaling a malfunctioning condition of the engine, for causing a piston rod of the piston device to be extended and engage a groove in said shaft to prevent said axial movement thereof.

4,362,517

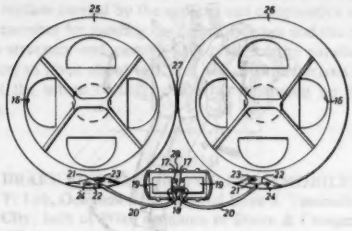
INFLATABLE LIFERAFTS

Michael D. Martin, Lipbook, England, assignor to RFD Inflatables Limited, Surrey, England

Filed Oct. 17, 1980, Ser. No. 198,174
Claims priority, application United Kingdom, Oct. 18, 1979, 7936193
Int. Cl.³ B63C *9/22*
U.S. Cl. 441—41 **12 Claims**

1. A survival unit, comprising:
a container; two inflatable liferafts coupled together on the respective peripheries thereof capable of being housed in said container in a deflated and folded condition, each of said liferafts being connected with a pressurized air or gas inflation unit; a flexible air or gas supply line or lines

connecting said inflation unit to said liferaft; an elongate flexible support means for connecting a point of attachment at said liferaft with said inflation unit, said elongate flexible support means supporting the inflation unit at a position remote from the point of attachment, supporting the flexible air or gas supply line or lines, and absorbing any tensile load which might otherwise be imposed on said supply line or lines during use of said liferafts; and



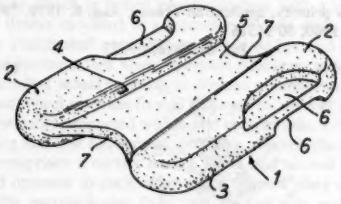
wherein upon inflation out of said container, the two liferafts take up fully inflated dispositions on the water, the length of said flexible support means and said air or gas supply line or lines and their respective points of attachment to the liferafts being such that the two liferafts take up fully inflated dispositions on the water without the need for withdrawal of the inflation units from the container.

4,362,518

COMBINED KICK BOARD AND ARM STROKE SWIMMING PRACTICE DEVICE

Guy Boissiere, Rouen, France, assignor to Adidas Fabrique de Chausseurs de Sport, Landersheim, France

Filed Oct. 9, 1980, Ser. No. 195,497
Claims priority, application France, Oct. 12, 1979, 79 25458
Int. Cl.³ A63C *5/00, 9/00, 11/00, 15/00*
U.S. Cl. 441—60 **6 Claims**



1. A combined kick board and leg float device for practicing swimming techniques either by holding the device at arm's length with the swimmer's hands to practice leg kicks, or holding the device between the swimmer's thighs to practice arm strokes, said device comprising a rigid elongated one piece buoyant body, having two spaced apart side portions each of transverse sections which are convex and contoured, and longitudinal sections which are symmetrical with respect to the longitudinal axis of the body, said side portions having internal flanks delimiting a central portion, of constant thickness, thinner than said side zones, the flanks defining above and below the said central portion identical continuous longitudinal hollow sections from one end of the device to the other, said side portions comprising means for gripping the buoyant body with the hands of a swimmer while the swimmer's legs are free to practice leg kicks while holding the buoyant body in front of himself, said hollow sections comprising means for holding the device between the insides of the thighs of a swimmer to practice arm swimming strokes while the swimmer's arms are free and the swimmer's legs are buoyed and immobilized by gripping the device between his thighs.

4,362,519

BOAT HULLS

Robert Gault, 12 Ranmoor Cliffe Rd., Sheffield S10 3HB, England

Division of Ser. No. 907,199, May 18, 1978, Pat. No. 4,225,551.
This application Mar. 31, 1980, Ser. No. 135,441
Int. Cl.³ B63B *7/00*
U.S. Cl. 114—353 **7 Claims**

1. In a foldable boat hull formed by erection and fastening of a blank of thermoplastic sheet material having formed therein a predetermined pattern of fold lines determining the folding of said blank in the erection of said hull, the improvement comprising:

a blank of a self-supporting stiffly flexible unitary sheet of polyolefin being adapted to form a hull;

plastic folds provided along selected ones of said fold lines having a fold memory tending when said blank is flat to return said sheet to its folded state about said selected fold lines;

plastic hinges provided along others of said fold lines wherein said polyolefin has undergone molecular reorientation such that said sheet hinges freely about said other fold lines; and

releasable fastening means being operatively connected to said blank for retaining said blank in an erected condition to form said hull, said hull being capable of being unfastened by releasing said releasable fastening means and flattened by opening said folds and hinges for storage and shipment;

said blank being of assistance to an assembler during erection by tending to return to its folded state when the blank is laid flat for reuse.

4,362,520

FLEXIBLE ENCLOSED SHAFT

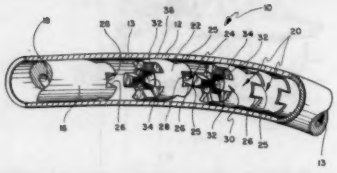
John C. Perry, 3170 Falcon Dr., Carlsbad, Calif. 92008

Filed May 12, 1980, Ser. No. 149,254
Int. Cl.³ F16D *1/00*
U.S. Cl. 464—149 **1 Claim**

1. A flexible, reversible, rotatable shaft that will accommodate for axial misalignments between input and output shafts comprising:

an outer, tubular, flexible pipe having a first and a second end, said input shaft being positioned concentrically within said first end of said pipe, said output shaft being positioned concentrically within said second end of said pipe, said flexible pipe serving as a bearing surface for said input and output shafts; and

one or more substantially cylindrically shaped shaft segments having first and second ends connected between said input and output shaft in said pipe, said first end of said segment defining crossed notch openings, each notch being substantially 90° apart, formed axially within said first end of said shaft segment, said second end of said segment defining crossed teeth extending axially from said second end of said segment, each tooth being substantially 90° apart, said notch openings formed in said first end of said segment further including diverging substantially axially aligned walls formed by said segment from a narrow entrance notch opening to a wider notch portion at the termination end of said notch, said crossed teeth extending axially from said second end of said segment having parallel axially aligned walls, the tooth portion of said segment interfits within said notch openings formed by an adjacent shaft segment, said crossed teeth being free to move within the confines of said diverging walls of said notch openings, thus allowing for axial and longitudinal flexibility between shaft segments within said tubular pipe while the inner portion of said crossed teeth remain in intimate contact with said entrance opening of said notch openings.



4,362,521

POWER TRANSMISSION SHAFT

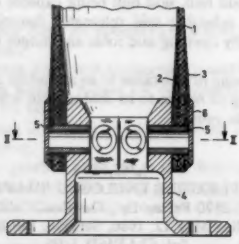
Alfred Puck, Kassel, Fed. Rep. of Germany, and Peter Voirol, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,077

Claims priority, application Switzerland, May 10, 1979, 4373/79

Int. Cl.³ F16D *3/26*

U.S. Cl. 464—181 **15 Claims**



1. A power transmission shaft, comprising a plastics tube reinforced by fibres of high stiffness, fittings secured to its two ends and at each end of the tube a wall reinforcement of fibre reinforced plastics tapering towards the middle of the tube, the wall reinforcment fibre structure being similar to that of the tube so that the tube and the wall reinforcements have at least approximately the same anisotropic behaviour, and radial bolts located in the region of the wall reinforcements securing said fittings to said tube.

4,362,522

DERAILLEUR FOR A CHAINWHEEL ASSEMBLY FOR A BICYCLE

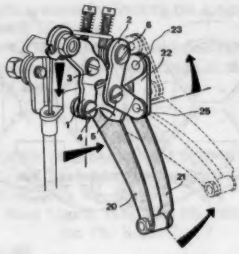
Roger H. M. Huret, Nanterre, France

Filed Nov. 29, 1979, Ser. No. 98,384

Claims priority, application France, Dec. 4, 1978, 78 34143

Int. Cl.³ F16H *11/08*; B62M *9/12*

U.S. Cl. 474—82 **9 Claims**



1. A chainwheel derailleur for a bicycle comprising a guide fork member, having two fingers, each of said fingers lying substantially in a plane, and extending on a respective side of the traction drive run of the chain upstream of the chainwheels, the fork member being movable transversely with respect to its plane under the action of an actuating means, characterised in that one at least of the fingers of the fork member is mounted pivotally to rotate about an axis perpendicular to its plane and means is provided for rotating said one of said fingers about its axis in response to the action of the actuating means.

4,362,523

DERAILLEUR FOR A CYCLE

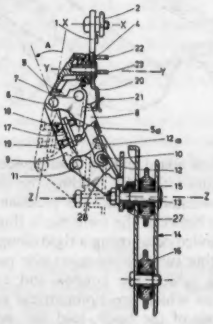
Rogert H. M. Huret, Nanterre, France, assignor to Huret & Ses Fils, Nanterre, France

Filed Jul. 31, 1980, Ser. No. 174,345

Claims priority, application France, Aug. 8, 1979, 79 20329; Jun. 27, 1980, 80 14316

Int. Cl.³ F16H *7/22*

U.S. Cl. 474—82 **12 Claims**



1. A derailleur for a cycle chain and sprockets on a wheel of a cycle having an axis of rotation, the derailleur comprising a support for fixing on a frame of the cycle, a deformable parallelogram structure, a traction cable connected to the parallelogram structure for deforming said structure, the parallelogram structure comprising a first side member mounted on the support to pivot about a first axis, a second side member opposed to said first side member, and a first arm and a second arm opposite the first arm, the first and second side members and

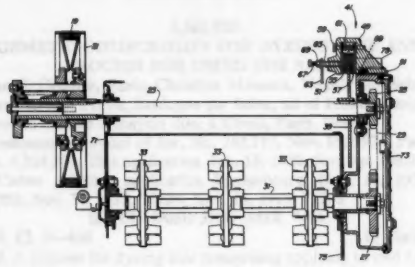
the first and second arms being pivotally interconnected so that the parallelogram structure is deformable substantially in a first plane substantially parallel to said first axis, a yoke provided with a chain guide roller and a chain tensioning roller and mounted on said second side member to pivot about a second axis substantially parallel to said first axis, means for elastically biasing the yoke relative to said second side member in a direction about said second axis for tensioning the chain, a finger member carried by one of said arms, and means defining a cam surface carried by the support and cooperative with the finger member for guiding the finger member and the parallelogram structure and causing said plane of the parallelogram structure to pivot about said first axis toward the axis of rotation of the wheel of the cycle when changing up the gear speeds.

4,362,524

BRAKE MECHANISM FOR SNOWMOBILES

James P. Lob, Oconomowoc City, and Dean J. Tessenske, Horicon City, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Sep. 11, 1980, Ser. No. 186,278
Int. Cl.³ F16H *7/00*; B62M *27/02*
U.S. Cl. 474—88 **3 Claims**



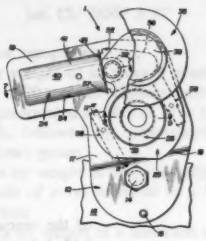
1. In combination, a snowmobile including an engine driving a primary clutch in belted communication with a secondary clutch fixably mounted to a secondary clutch shaft, said secondary clutch shaft rotatably supported within said snowmobile and having a first wheel sprocket fixably mounted at one end, said first wheel sprocket in chained communication with a second wheel sprocket fixably mounted to one end of a drive shaft rotatably supported within said snowmobile, a chain case covering said first and second sprockets, wherein the improvement comprises: a carrier having a first and second side wall aligned opposite to each other and a support plate extending generally perpendicular from said second side wall; a first brake plate including a brake pad fixably mounted thereto; a second brake plate including a brake pad fixably mounted thereto; means for supportably suspending said first and second brake pads between said first and second carrier side wall, said first brake plate being movable toward said second brake plate; biasing means for biasing said first and second brake plates away from each other; a brake disc fixably mounted around said secondary clutch shaft; said chain case having a first and second support wall in opposite spaced-apart alignment, each support wall having cooperatively aligned grooves sized to recieve the side edges of said plate section of said carrier such that a portion of said brake disc is between said brake plates in spaced-apart relationship, said carrier being slidable in said grooves of said chain case; stop means to limit the travel of said carrier in said grooves; biasing means to bias said carrier and said brake plates in a brake release condition away from said brake disc; and actuator means for moving said first brake pad against one side of said brake disc and causing said carrier to slide in said groove to cause said second brake pads to contact the other side of said disc.

4,362,525

BELT TENSIONER CONSTRUCTION

Nolte V. Sproul, Canton, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Filed Aug. 8, 1980, Ser. No. 176,454
Int. Cl.³ F16H *7/08*
U.S. Cl. 474—117 **10 Claims**



10. A belt tensioner construction for tensioning an endless drive belt of a drive system for vehicle accessories, said tensioner construction including:

(a) bracket means adapted to be mounted on a vehicle engine adjacent the drive belt, said bracket means having an engine-mounting flange at one end and a spring-mounting flange at the opposite end;

(b) first spring means mounted on the bracket means, said first spring means having a cup-shaped housing and a pair of compression coil springs mounted in the housing with said housing being mounted on the spring-mounting flange of the bracket means;

(c) lever means pivotally mounted on the bracket means and biased by the first spring means in a belt tensioning direction;

(d) rotatable pulley means mounted on the lever means and movable into tensioning engagement with the drive belt upon pivotal movement of the lever means by the first spring means;

(e) friction means operatively engageable between the bracket means and lever means to retard pivotal movement of the lever means in a direction opposite to the belt tensioning direction; and

(f) plunger means pivotally mounted on the lever means and operatively engaged by the coil springs which bias the plunger means and lever means in the belt tensioning direction.

4,362,526

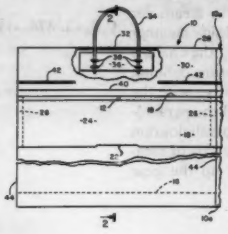
METHOD OF MAKING PLASTIC HANDLE BAGS FROM CONTINUOUS WEB

James R. Wilson, Northport, N.Y., assignor to Equitable Bag Co., Inc., Long Island City, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,799
Int. Cl.³ B31B *1/86*
U.S. Cl. 493—226 **12 Claims**

1. The method of making a bag having front and rear sidewalls, the upper end of the rear sidewall being folded forward and downward at its upper end and having a slot through which a handle is inserted with a lower part of the handle longer than the slot and in contact with the inside of the fold beyond both ends of the slot to support the bag from the handle, the upper end of the rear sidewall of the bag being a continuation of the lower part of the rear sidewall, the upper part of the front sidewall being folded downward over the lower part of the front sidewall and temporarily held against the lower part of the front sidewall, and holding the folded upper end of the front panel with its folded top edge below the folded down panel of the folded rearward panel until the handle has been inserted into the folded rearward panel and pushed up through the slot in the fold at the top of the rear-

ward side of the bag, then turning the upper end of the folded front panel by pulling a temporary connection free of the lower portion of the front wall of the bag after the handle has been inserted through the slot in the top of the folded portion



of the rearward panel, and closing the bag by placing the folded front portion of the cover over the folded rearward portion of the bag with the handle extending through a slot in the top of the forward folded end of the bag to hold the bag closed.

4,362,527

RADIATION-RESISTANT FLUOROAROMATIC CELLULOSIC ETHERS

Robert J. Harper, Jr., Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 4, 1982, Ser. No. 337,045
Int. Cl.³ D06M *13/08*
U.S. Cl. 8—194 9 Claims

1. A process to improve the radiation resistance of cellulose fabrics comprising:
(a) immersing a fabric in a caustic solution;
(b) removing the excess solution from the fabric;
(c) padding said fabric using a neutralized aqueous bath of pentafluorobenzoic acid;
(d) curing said fabric.

3. The process of claim 1 including the following steps after step (b):
(a) refluxing the cured fabric in a solution containing 17 g of pentafluorobenzamide and 83 g of dimethyl formamide for 2 hours;
(b) rinsing the fabric in water;
(c) extracting the fabric with acetone;
(d) rinsing the fabric with water;
(e) drying the fabric.

4,362,528

COSMETIC COMPOSITION FOR DYEING HAIR AND PROCESS FOR USING THE SAME

Jean F. Grollier, Paris; Christian Monnais, Neuilly sur Seine, and Lyonel Peritz, Boulogne sur Seine, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 742,117, Nov. 15, 1976, Pat. No. 4,314,807. This application Jun. 13, 1980, Ser. No. 159,248
Claims priority, application Luxembourg, Nov. 13, 1975, 73793; Nov. 13, 1975, 73794; Nov. 13, 1975, 73795
Int. Cl.³ D06D *3/04;* A61K *7/06*
U.S. Cl. 8—406 10 Claims

1. A process for dyeing hair comprising applying to said hair in an amount sufficient to color said hair a hair dye formulation comprising a mixture of an effective amount of an oxidation hair dye composition containing at least one hair dye or dye precursor, and a hair dye carrier, an effective amount of an oxidizing agent and an effective amount of at least one cationic polymer, permitting said hair dye formulation to remain in contact with said hair for a time of about 5–40 minutes, rinsing said hair with water, applying to said rinsed hair an effective amount of a shampoo formulation comprising an effective amount of at least one anionic detergent and rinsing said hair with water.

4,362,529

HEAT TRANSFER PRINTING SHEET AND HEAT TRANSFER PRINTING METHOD USING THE SAME

Shogo Mizuno, Toride, and Sumio Ishii, Inaki, both of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 671,066, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 452,658, Mar. 19, 1974, abandoned. This application Jun. 30, 1978, Ser. No. 920,683
Claims priority, application Japan, Mar. 20, 1973, 48-31440
Int. Cl.³ D06D *3/70*
U.S. Cl. 8—471 25 Claims

1. A heat transfer printing sheet characterized in that a pattern comprising a basic dye having a poor heat transferable property, an alkaline agent having a property of increasing the heat transferable property of the basic dye and a binder is formed on a base support sheet and also a resin film through which the basic dye can be passed when the heat transfer printing is carried out, but can not be passed through when the heat transfer printing is not carried out is formed on the pattern.

4,362,530

DYEING AUXILIARIES CONTAINING MIXED ANIONIC, CATIONIC AND NON-IONIC ETHYLENE OXIDE ADDUCTS

Rolf Gross, Reinach, and Rene Fricker, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Mar. 19, 1981, Ser. No. 245,290
Claims priority, application Switzerland, Mar. 20, 1980, 2198/80
Int. Cl.³ D06P *3/82*
U.S. Cl. 8—529 17 Claims

1. A composition comprising
(A) 10 parts by weight of an anionic product obtained by addition of 5 to 20 mols of ethylene oxide to an aliphatic saturated or unsaturated alcohol of 10 to 24 or a mixture of such alcohols, followed by carboxymethylation of the terminal hydroxy group
(B) 1 to 15 parts by weight of a cationic addition product of 50 to 150 mols of ethylene oxide to a fatty amino-(C_{2-3})alkylene-amine
(C) 1 to 10 parts by weight of a non-ionic addition product of 20 to 150 mols of ethylene oxide to castor oil, or a non-ionic sequenced addition product of 20 to 150 mols of ethylene oxide and 1 to 10 mols of propylene oxide to castor oil, and
(D) 1 to 20 parts by weight of a N-(β-hydroxy-(C_{2-4})alkyl)-fatty acid amide.

4,362,531

AGGLUTINATION IMMUNOASSAYS CARRIED OUT WITH AGENT TO REDUCE NON-SPECIFIC INTERFERENCES

Floris de Steenwinkel, Brussels; Daniel Collet-Cassart, Wavre, and Pierre L. Masson, Brussels, all of Belgium, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Apr. 14, 1981, Ser. No. 254,037
Claims priority, application United Kingdom, Apr. 15, 1980, 8012428
Int. Cl.³ G01N *33/54, 33/78*
U.S. Cl. 23—230 B 19 Claims

1. A method of immunoassay for an analyte in a liquid sample, which comprises forming a mixture of the liquid sample with finely divided particles comprising a protein and a reagent, whereby specific agglutination or the particles occurs to an extent dependent on the amount of analyte present, and determining said extent and thereby the amount of analyte present, wherein the mixture also includes one or more agents to reduce non-specific protein interaction interferences, the amount of said agent(s) being sufficient to reduce the effect on agglutination of said interferences, wherein said agents comprise at least one compound selected from the group consisting of guanidinium hydrochloride, guanidinium thiocyanate, sodium thiocyanate, ammonium thiocyanate, sodium chloride, ethylene diamine tetraacetic acid, lithium nitrate, lithium chlorate, lithium isocyanate, lithium bromide, sodium bromide, potassium bromide, potassium thiocyanate, calcium chloride, lithium chloride and lithium iodide.

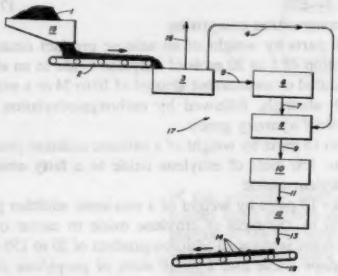
14. A particle agglutination specific binding assay composition for the non-specific protein interaction interference-free determination of an analyte in a liquid sample, which composition comprises:
a particle to which is bound protein and a specific binding partner for said analyte; and
an agent comprising at least one compound selected from the group consisting of guanidinium hydrochloride, guanidinium thiocyanate, sodium thiocyanate, ammonium thiocyanate, sodium chloride, ethylene diamine tetraacetic acid, lithium nitrate, lithium chlorate, lithium isocyanate, lithium bromide, sodium bromide, potassium bromide, potassium thiocyanate, calcium chloride, lithium chloride and lithium iodide.

4,362,532

PRODUCTION OF BLAST FURNACE COKE VIA NOVEL BRIQUETTING SYSTEM

George E. Wasson, Eighty Four, and Frank W. Theodore, Pittsburgh, both of Pa., assignors to Conoco Inc., Stamford, Conn.

Filed Aug. 11, 1981, Ser. No. 291,752
Int. Cl.³ C10L 5/16
U.S. Cl. 44—23 11 Claims



1. A method of making high strength coke briquettes comprising the sequence of steps as follows:

(a) providing coal,

(b) heating said coal to partial carbonization temperatures at or above the softening point of said coal and below the temperature at which said coal loses a substantial portion of its caking property, to form partially carbonized char,

(c) cooling said partially carbonized char to below the softening point of the coal,

(d) mixing said cooled partially carbonized char and tar to form a mixture of tar and partially carbonized char,

(e) briquetting said mixture of tar and partially carbonized char at a temperature below the softening point of coal to form briquettes of tar and partially carbonized char,

(f) calcinating said briquettes to form high strength briquettes.

4,362,533

TERPOLYMERS OF ETHYLENE, VINYL ACETATE, AND STYRENE AS POUR POINT DEPRESSANTS FOR DISTILLATE FUELS

Nash A. Kidd, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 13, 1976, Ser. No. 749,849
Int. Cl.³ C10L 1/22
U.S. Cl. 44—62 4 Claims

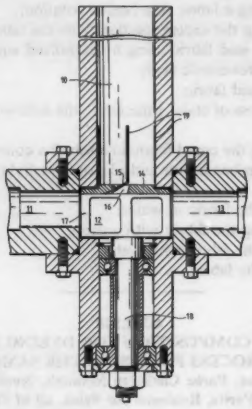
1. Pour point depressant terpolymers for middle distillate fuels, consisting essentially of from about 45 to about 75 percent ethylene, at least about 5 percent vinyl acetate, and at least about 5 percent styrene, by weight, and having melt flow rate as defined from about 1 to about 50 dg/min, particularly characterized in that the terpolymers are prepared by free-radical-initiated terpolymerization of ethylene, vinyl acetate and styrene under substantially steady state terpolymerization conditions of at least 1000 atmospheres pressure and temperature of at least 200° C.

4,362,534

SAFETY FUEL ADMIXTURE APPARATUS

Kenneth I. W. Bird, Aldershot, and Evan S. Thomas, Farnborough, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 25, 1980, Ser. No. 210,229
Int. Cl.³ C10L 1/22
U.S. Cl. 44—62 16 Claims



1. In combination with an apparatus for supplying liquid fuel to the fuel tank of a vehicle having a liquid fuel reservior and a fuel pump, safety fuel admixing means comprising:

a liquid feed tube connected to an outlet from said liquid fuel reservoir,

a hopper for supplying polymer is solid form and attached to said liquid feed tube, and

a rotary mill located between said hopper and said liquid feed tube,

said mill having a cutting edge protruding into said hopper for cutting swarf from the polymer, and an associated duct for conveying the polymer swarf into said fuel feed tube.

4,362,535

SINTERED METAL BONDED DIAMOND ABRASIVE ARTICLES

Eiji Isobe; Izumi Hayakawa, and Akira Emura, all of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

PCT No. PCT/JP80/00242, § 371 Date Jun. 9, 1981, § 102(e) Date May 20, 1981, PCT Pub. No. WO81/00981, PCT Pub. Date Apr. 16, 1981
PCT Filed Oct. 8, 1980, Ser. No. 269,013
Claims priority, application Japan, Oct. 9, 1979, 54-130403
Int. Cl.³ B24D 3/02
U.S. Cl. 51—309 2 Claims

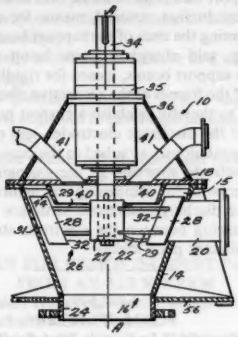
1. A metal bonded diamond abrasive article composed of a diamond powder and of a sintered nickel base metal bond retaining the diamond powder, which is characterized in that the sintered metal bond consists essentially of 2 to 30% by weight of copper, 1 to 40% by weight of tin, 0.2 to 3% by weight of phosphorous, and the balance of nickel, the total amount of copper, tin, and phosphorous being less than 50% by weight.

4,362,536

PULP DEGASSING

Johan E. Gullichsen, Helsinki, Finland, assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,174
Int. Cl.³ B01D 19/00
U.S. Cl. 55—52 7 Claims



1. A method of degassifying pulp having a consistency of about 6–15%, utilizing a degassifier comprising a housing tapering from a first end to a second end thereof along a central axis with a pulp inlet adjacent to the first end and a pulp outlet adjacent to the second end, and a rotatable blade assembly adjacent to the pulp inlet, and a gas outlet adjacent to the first end, comprising the steps of:

feeding the pulp into the housing through the pulp inlet with a velocity component intersecting a plane containing the central axis of the housing;

rotating the blade assembly to impart a high speed rotational velocity component to the pulp as it enters the housing;

effecting movement of the pulp along the central axis of the housing toward the pulp outlet while gas within the pulp is being squeezed out; and

withdrawing gas separated from the pulp through the gas outlet adjacent the central axis and pulp inlet of the housing.

4. A pulp degassifier comprising

a housing substantially circular in cross-section and tapering inwardly from a first end thereof toward a second end thereof along a central axis;

means defining a pulp inlet to said housing adjacent said first end thereof, said pulp inlet extending along a line intersecting a plane containing said central axis;

means defining a pulp outlet adjacent said second end of said housing;

a blade assembly;

means for mounting said blade assembly adjacent said pulp inlet for rotation about an axis generally coincident with said housing central axis;

means defining a gas outlet adjacent said housing first end and adjacent said central axis;

means for preventing short-circuiting of pulp from said pulp inlet to said gas outlets, comprising a conically shaped shroud surrounding said gas outlet;

means for rotating said blade assembly about said axis of rotation thereof so that said blade assembly imparts a high velocity to the pulp;

said means for mounting said blade assembly for rotation comprising a shaft extending centrally into said housing through said first end thereof; and

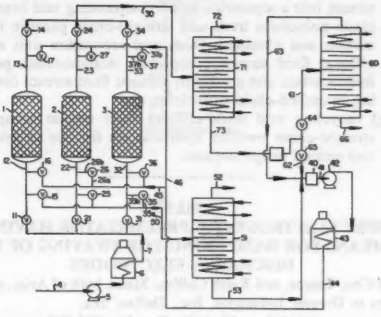
said means defining a gas outlet comprising: a top plate capping off said housing first end and receiving said shaft through a central opening thereof; means defining a plurality of openings in said top plate surrounding said shaft; and a conduit connected to each of said plurality of openings formed in said top plate surrounding said shaft.

4,362,537

METHOD FOR THE REMOVAL OF POLYMER FROM A PURGE MEDIUM IN A MONOOLEFIN ADSORPTION - DESORPTION SEPARATION PROCESS

Robert G. Werner, Danbury, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 27, 1981, Ser. No. 238,843
Int. Cl.³ B01D 53/04
U.S. Cl. 55—62 7 Claims



1. In a process for the separation of hydrocarbons in a vapor feed stream containing straight-chain and branched-chain monoolefin having from four to six carbon atoms inclusive comprising:

as an adsorption step,

passing said vapor feed stream into one end of an adsorber containing molecular sieve having a pore diameter of about 5 Angstroms and having adsorbed thereon a straight-chain paraffin hydrocarbon; and

obtaining from the other end of said adsorber a first effluent fluid stream exiting in vapor phase comprising branched-chain monoolefin, branched-chain polyolefin, and straight-chain paraffin hydrocarbon;

as a copurge step,

passing a first vapor purge stream containing straight-chain paraffin hydrocarbon into said one end of said adsorber; and

obtaining from said other end of said adsorber a second effluent fluid stream exiting in vapor phase comprising branched-chain monoolefin, branched-chain polyolefin, and straight-chain paraffin hydrocarbon;

as a countercurrent purge step,

passing a second vapor purge stream containing a straight-chain paraffin hydrocarbon into said other end of said adsorber; and

obtaining from said one end of said adsorber a third effluent fluid stream exiting in vapor phase comprising straight-chain monoolefin, branched-chain polyolefin, and straight-chain paraffin hydrocarbon;

wherein the partial pressure of the straight-chain paraffin hydrocarbon content of said first and second vapor purge streams is greater than the partial pressure of the straight-chain monoolefin content of the vapor feed stream and wherein said molecular sieve is partially loaded with straight-chain paraffin hydrocarbon during all of said adsorption, copurge and countercurrent purge steps; and

separating said branched-chain monoolefin from said branched-chain polyolefin and said straight-chain paraffin hydrocarbon in said first and second effluent fluid streams, said separation providing a fourth effluent fluid stream comprising branched-chain polyolefin and straight-chain paraffin hydrocarbon;

separating said said straight-chain monoolefin from said branched-chain polyolefin and said straight-chain paraffin hydrocarbon in said third effluent fluid stream, said separation providing a fifth effluent fluid stream comprising branched-chain polyolefin and straight-chain paraffin hydrocarbon;

the improvement in which comprises:

(a) recycling said fifth effluent fluid stream comprising branched-chain polyolefin and straight-chain paraffin hydrocarbon for use in said first and second purge streams without separation of said branched-chain polyolefin from said straight-chain paraffin hydrocarbon in said fifth effluent fluid stream;

(b) introducing at least a portion of said fourth effluent fluid stream into a separation unit for separating said branched-chain polyolefin from said straight-chain paraffin hydrocarbon and obtaining from said separation unit a sixth effluent fluid stream comprising straight-chain paraffin hydrocarbon and a seventh effluent fluid stream comprising branched-chain polyolefin; and

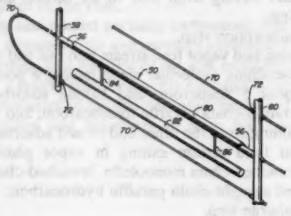
(c) recycling said sixth effluent fluid stream comprising straight-chain paraffin hydrocarbon for use in said first and second purge streams.

4,362,538

WET ELECTROSTATIC PRECIPITATOR HAVING MEANS FOR DAMPENING THE SWAYING OF ITS DISCHARGE ELECTRODES

Karl Cox, Tempe, and Keith Collins, Mesa, both of Ariz., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 25, 1981, Ser. No. 295,971
Int. Cl.³ B03C *3/16, 3/41*
U.S. Cl. 55—118 **6 Claims**



1. A wet electrostatic precipitator comprising a housing having an inlet to receive gas to be treated and an outlet to discharge treated gas, a plurality of generally flat discharge electrode structures, means for rigidly suspending the electrode structures from their upper ends within the housing in the flow path of the gas such that the electrodes are generally parallel to each other and substantially equidistantly spaced, charging means adapted for charging the electrode structures with a high voltage, collector plate means positioned between each electrode structure and adapted when said electrode structures are charged for creating an electrostatic field for treating the gas means for providing liquid on said plate means to flush particles therefrom, each discharge electrode structure including a horizontally extending cross member adjacent its lower end, and stabilizing means pendulously suspended from the cross member of each discharge electrode structure in free-swinging frictional engagement therewith for dampening the oscillation of the respective discharge electrode structure against any incurred influence of sparking between the electrode structures, and the associated collector plate means.

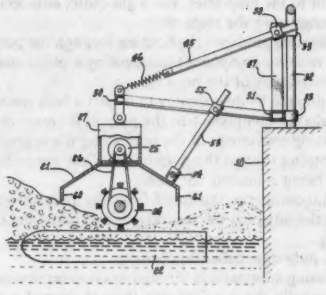
4. An improved wet electrostatic precipitator including a housing having an inlet to receive gas to be treated and an outlet to discharge treated gas, a plurality of generally flat discharge electrodes, support means for rigidly suspending the electrodes from their upper ends within the housing in the flow path of the gas such that the electrodes are generally parallel to each other and substantially equidistantly spaced, charging means adapted for charging the electrodes with a high voltage, collector plate means positioned between each electrode and adapted when said electrode structure is charged for creating an electrostatic field for treating the gas and means for providing liquid on said plate means to flush particles therefrom, wherein the improvement comprises: each discharge electrode including a frame having a cross member adjacent its lower end, said support means includes support beams made from an electrically conductive material, means for rigidly and horizontally mounting the ends of the support beams to the precipitator housing, said charging means being electrically connected to the support beams, means for rigidly connecting the upper ends of the frames of the respective discharge electrodes to the beams to thereby establish a current path from the support beams to the discharge electrodes, and oscillation dampening means pendulously attached to the cross member of each discharge electrode structure in free-swinging frictional engagement therewith for dampening any incurred oscillation of the respective discharge electrode structure that may be induced by sparking between the electrode structures and the associated collector plate means.

4,362,539

FOAM SPLITTER

Eugene D. Nelson, 9532 La Canada Way, Sunland, Calif. 91040, and Ivan Rasovich, 2653 Timberlane Dr., La Crescenta, Calif. 91214

Filed Sep. 29, 1980, Ser. No. 191,402
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—178 **4 Claims**



1. In an apparatus for breaking foam on the surface of a liquid, the combination of:

a downward opening housing;

a splitter member mounted in said housing for rotation about a generally horizontal axis, said splitter member including a plurality of radially extending circumferential disposed fingers;

drive means for rotating said splitter member; and

suspension means for supporting said housing and splitter member at the surface of a liquid;

said suspension means including:

a frame having first and second edges;

means for pivotally mounting said frame to said housing at said first edge;

means for pivotally mounting said frame to a wall structure at said second edge;

a stabilizer bar pivotally mounted to said housing below said first edge and to said frame between said first and second edges; and

a resilient member connected between said frame at said first edge and the wall structure.

4. In an apparatus for breaking foam resting on the surface of a liquid, the combination of:

a support member;

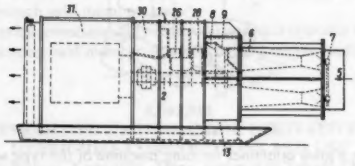
a splitter member mounted in said support member for rotation about a generally horizontal axis, said splitter member including a plurality of radially extending circumferentially disposed fingers;
drive means for rotating said splitter member; and
suspension means for positioning said support member and splitter member at the surface of a liquid, and including
a frame having first and second edges,
means for pivotally mounting said frame to said support member at said first edge,
means for pivotally mounting said frame to a wall structure at said second edge,
a stabilizer bar pivotally mounted to said support member below said first edge and to said frame between said first and second edges, and
a resilient member connected between said frame at said first edge and the wall structure.

4,362,540

APPARATUS FOR REMOVING DUST PARTICLES FROM AN AIR STREAM

Emanuel Strahsner, Hangweg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Jul. 31, 1981, Ser. No. 289,075
Claims priority, application Austria, Aug. 5, 1980, 4045/80
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—257 C **13 Claims**



1. Apparatus for removing dust particles from an air stream, particularly for the ventilation of mines, said apparatus including a centrifugal separator having an air inlet end and an air outlet end and having blade wheel sections driven via a common shaft to rotate at an approximately constant speed within a stationary housing, said blade wheel sections having blades extending in axial planes connected with their radially outer ends to co-rotating peripheral walls, the distance of which walls from the axis of rotation of the blade wheel sections increasing in the direction from the inlet end to the outlet end of the centrifugal separator, at least one of said blade wheel sections having blades radially extending approximately in axial planes, and those portions of said peripheral walls which are spaced the largest distance from the axis having passage openings opening toward the housing surrounding the blade wheel sections, a blower connected to the outlet end of said centrifugal separator for moving the air stream through the centrifugal separator, and a means which precedes the centrifugal separator in the direction of flow of the air for spraying water into the air stream entering the centrifugal separator, characterized in that said blade wheel sections are preceded at the air inlet end of the centrifugal separator by at least one blade wheel section in which those generatrices of the surface of its blades which are equidistant from the axis are inclined at an angle of incidence from lines extending in axial planes parallel to the axis, in a direction which is opposite to the direction in which the resultant vector of the axial air entry velocity vector and the mean peripheral velocity vector of the blades of said preceding blade wheel section is inclined with respect to an axial plane extending through the axis of the centrifugal separator.

4,362,541

METHOD AND APPARATUS FOR PRODUCING GLASS FIBERS OR FILAMENTS

Thomas K. Thompson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 27, 1981, Ser. No. 258,205
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **24 Claims**

22. The method of forming filaments from heat-softened glass including flowing streams of glass from orifices in a feeder, attenuating the streams to filaments by winding a group of the filaments into a package, delivering streams of air from outlets of nozzles upwardly during normal attenuating operations into contact with the streams of glass and the orificed region of the feeder in an amount to convey away sufficient heat to render the glass of the streams attenuable and stabilize the temperature environment at the stream flow region, and upon interruption of an attenuating operation increasing the angularity of the nozzles and thereby increasing the angularity of the upwardly directed streams of air relative to the normal path of movement of the filaments while maintaining substantially constant the positions of the outlets of the nozzles for the delivery of the air with respect to the path of movement of the filaments attenuated from the streams.

4,362,542

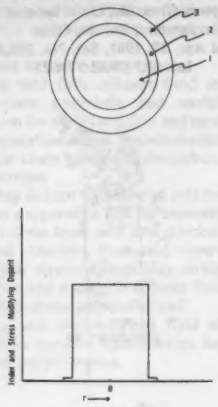
METHOD OF PRODUCING A STRONG OPTICAL FIBER

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034; Robert K . Mohr, Washington, D.C., and Prabhat K. Gupta, Columbus, Ohio, assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Silver Spring, both of, Md.

Continuation of Ser. No. 76,137, Sep. 17, 1979, abandoned, which is a division of Ser. No. 755,588, Dec. 30, 1976, Pat. No. 4,181,403. This application Nov. 2, 1981, Ser. No. 317,487
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.³ C03B *37/075*; C03C *25/02*
U.S. Cl. 65—3.11 **6 Claims**

1. In a method of making a strong fiber waveguide in which a preform is heated and pulled to make a fiber, the improvement comprising adding to the preform at least one dopant capable of creating a mechanical stress profile in said preform and at least another dopant capable of creating an index of refraction profile in said preform, and varying the dopants added to produce a composition profile which varies radially from the center to the surface of the preform to form a core, an

intermediate clad layer having an index of refraction smaller than the core and a surface layer which is in compression



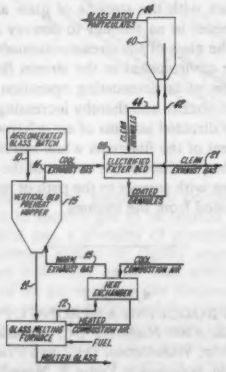
having a predetermined thickness less than 10% of the radius of the core, said compression being greater than 20,000 psig.

4,362,543

METHOD FOR CONTROLLING PARTICULATE EMISSIONS

Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 19, 1981, Ser. No. 245,831
Int. Cl.³ C03C *1/00*; C03B *3/00*
U.S. Cl. 65—27 **4 Claims**



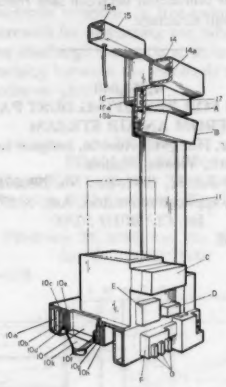
1. A process for producing glass by charging to a melting furnace and melting therein a boron or fluorine containing batch comprising the steps of agglomerating the batch using a liquid, charging the wet agglomerates onto the upper surface of a vertical bed preheat hopper having a lower discharge end communicating with the furnace, substantially simultaneously (1) withdrawing agglomerates through said lower discharge end for charging to the furnace, (2) moving the remaining agglomerates by gravity downwardly through the bed, (3) passing the hot furnace exhaust gas upwardly through the bed to heat the agglomerates therein, (4) drying the wet agglomerates on the upper surface of the bed with spent exhaust gas which has already passed through the bed, (5) electrically charging the spent exhaust gases which have passed through the bed wherein the spent exhaust gases contain glass batch particulate which are charged when step (5) is carried out, and (6) passing the charged exhaust gases through an electrified bed of granules wherein the charged glass batch particulate is removed from the spent exhaust gases by collecting on the charged granules when step (6) is carried out and wherein the granules are limestone or calcium oxide.

4,362,544

FLUID CONTROL SYSTEM FOR GLASSWARE FORMING MACHINE

James D. Mallory, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 24, 1981, Ser. No. 286,410
Int. Cl.³ C03B *9/40*
U.S. Cl. 65—163 **3 Claims**



1. In a glass container forming machine of the type where a plurality of individual sections are juxtaposed and receive mold charges from a common feeder, with each section being capable of producing a completed container by itself, and the sections all rest on a common base, the improvement comprising said base having a plurality of elongated channels formed therein that extend the length thereof and are structurally part of the base, a plurality of elongated tubular housings extending parallel to said base and coextensive therewith, said housings being elevated above the sections, one said tubular housing serving as a common manifold for blow air to all of the blow-heads on all of the sections, means connecting sources of air under pressure to selected channels in said base, means providing electrical leads within others of said channels in said base, means providing ductwork for electrical leads in the supporting structure for the said tubular housing and extending parallel thereto, said channels in said base serving to provide operating air under more than one pressure to motors on all of said sections, electrically actuated valve means in the connections from the channels to said operating motors, and computer means connected to said valve means in each section for actuating said valves in a predetermined sequence.

4,362,545

SUPPORT MEMBER FOR AN OPTICAL WAVEGUIDE PREFORM

Alan C. Bailey, and Stephen B. Miller, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

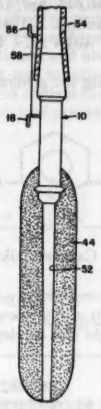
Division of Ser. No. 165,649, Jul. 3, 1980, Pat. No. 4,289,522.
This application Feb. 25, 1981, Ser. No. 237,852
Int. Cl.³ C03B *19/06*; F16L *25/00*
U.S. Cl. 65—169 **20 Claims**

1. An article comprising

a hollow tubular member defining a longitudinal aperture

and having one end thereof tapered of diminishing wall thickness for approximately the length of said taper,

an outwardly extending protrusion disposed adjacent said one tapered end of said member,



means for providing a substantially gas-type connection to said member disposed at the end of said member opposite said one end whereby a gaseous medium may be flowed through said member, and

means intermediate said protrusion and said opposite end for securing said member to a source of gaseous medium.

4,362,546

TETRAHYDROPHTHALAMIDE DERIVATIVES, HERBICIDAL COMPOSITIONS AND USE

Hiroshi Nagase, Kawanishi, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 27, 1980, Ser. No. 153,098

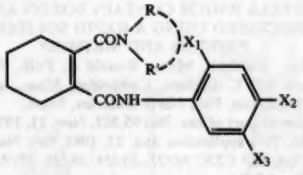
Claims priority, application Japan, May 28, 1979, 54-66565

The portion of the term of this patent subsequent to May 4, 1982, has been disclaimed.

Int. Cl.³ A01N *37/22*; C07C *103/737*; C07D *295/18*

U.S. Cl. 71—88 **23 Claims**

1. A tetrahydrophthalamide compound of the formula:



wherein

X_1 is hydrogen or halogen;

X_2 is halogen, C_{1-3} alkoxy or halogen-substituted benzyloxy;

at least one of X_1 and X_2 is halogen;

X_3 is hydrogen, C_{1-3} alkoxy or alkenyloxy; R and R′ are the same or different

(a) alkyl,

(b) cycloalkyl,

(c) alkenyl, or

(d) phenyl,

each of which may be substituted: or R and R′ may jointly, together with the nitrogen atom adjacent to R and R′, form an aliphatic heterocyclic ring containing one or two nitrogens, or nitrogen and oxygen.

2. A compound according to claim 1, wherein R and R′ are alkyl.

4,362,547

IMIDES DERIVED FROM 2-THIOXO-3-BENZOX(THIA)AZOLINE ACETIC, AND PROPIONIC ACIDS

John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

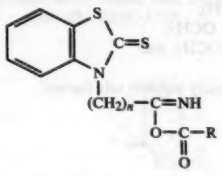
Division of Ser. No. 55,103, Jul. 5, 1979. This application Jan. 9, 1981, Ser. No. 223,637

The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.

Int. Cl.³ A01N *43/78*

U.S. Cl. 71—90 **1 Claim**

1. A method for preventing the growth of undesirable plants which comprises applying to the plant locus a herbicidally effective amount of a compound having the formula



where R is a lower alkyl and n is 1 or 2.

4,362,548

HERBICIDAL AND PLANT-GROWTH-REGULATING N-SUBSTITUTED-N-(2,5-DIALKYLPYRROL-1-YL) HALOACETAMIDES

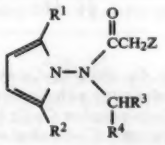
Stephen D. Ziman, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 60,320, Jul. 25, 1979, Pat. No. 4,282,028. This application Jan. 29, 1981, Ser. No. 229,371

Int. Cl.³ A01N *43/80*; C07D *275/02*

U.S. Cl. 71—90 **5 Claims**

1. A compound having the formula:



wherein R^1 and R^2 are alkyl of 1 to 3 carbon atoms or halo; R^3 is hydrogen or alkyl of 1 to 3 carbon atoms; z is halo and R^4 is isothiazolyl optionally substituted at a ring carbon with an alkyl group having 1 to 4 carbon atoms or phenyl.

5. A method for controlling grasses which comprises applying to said vegetation or its growth environment an herbicidally effective amount of the compound of the formula defined in claim 1.

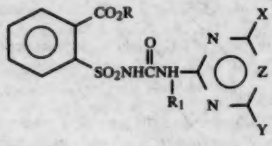
4,362,549

METHOD OF INCREASING SUGAR CONTENT IN SUGARCANE AND SORGHUM

George Levitt, Wilmington, Del., and William F. Smith, III, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1981, Ser. No. 234,235
Int. Cl.³ A01N *43/54*
U.S. Cl. 71—92 4 Claims

1. A method for increasing the sugar content of sugarcane and sorghum comprising: applying to the sugarcane or sorghum about 2–6 weeks prior to harvest an effective amount of a compound of the formula:



(I)

wherein

R is CH_3;

R_1 is H or CH_3;

X is CH_3, or OCH_3;

Y is CH_3 or OCH_3; and

Z is CH;

or an agriculturally suitable salt thereof.

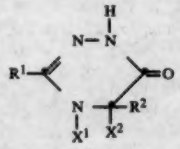
4,362,550

HERBICIDAL TRIAZINONES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 21, 1981, Ser. No. 333,134
Int. Cl.³ C07D *253/06;* A01N *43/64*
U.S. Cl. 71—93 17 Claims

1. A compound of the formula



wherein:

R^1 represents C_1–C_6 alkyl, C_3–C_6 cycloalkyl, phenyl or phenyl monosubstituted with C_1–C_3 alkyl, C_1–C_3 alkoxy, halogen, C_1–C_3 haloalkyl or C_1–C_3 haloalkoxy;

R^2 represents hydrogen, C_1–C_6 alkyl or C_3–C_6 cycloalkyl; and

X^1 and X^2 represent hydrogen atoms or combine to form a carbon-carbon bond;

with the provisos that when R^2 is methyl, R^1 is other than phenyl; and when X^1 and X^2 combine to form a carbon-carbon bond and R^2 is ethyl, R^1 is other than phenyl, 4-chlorophenyl and 4-methoxyphenyl.

16. A method for controlling undesired plants which comprises applying to the plants a growth inhibiting amount of a compound of claim 1.

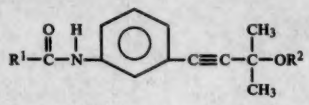
4,362,551

M-ALKYNYLANILIDES AND USE AS HERBICIDES

Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, both of Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 140,645, Apr. 16, 1980, Pat. No. 4,305,751.
This application Sep. 2, 1981, Ser. No. 298,706
Int. Cl.³ A01N *9/24;* C07C *125/06*
U.S. Cl. 71—106 6 Claims

1. Compounds having the general structural formula



in which R^1 is C_1 to C_4 lower alkylamino and R^2 lower N-alkylcarbamyl.

2. An agricultural composition comprising from 0.1 percent to 95 percent by weight of a compound of claim 1 and from 0.1 to 75 percent by weight of a carrier or surfactant.

4,362,552

FROTH FLOTATION OF ORES

Vojislav Petrovich, 1935, W. Schiller St., Chicago, Ill. 60622

Filed Jan. 29, 1979, Ser. No. 7,314
Int. Cl.³ B03D *1/02;* C22B *3/00*
U.S. Cl. 75—2 1 Claim

1. In concentrating by froth flotation of metallic ores selected from the group of molybdenum and wolfram, which includes the subjecting of such ore material when finely ground to froth flotation process which comprises; the step of oxidizng the molybdenum and wolfram mineral slurry to peroxy molybdenum and peroxy wolfram state with hydrogen peroxide or persulfate; the step of adding to the oxidized mineral slurry an amount of the order from 0.02 to 0.2 kg per ton of ore treated, oxalic acid or alkali oxalate and an amount of the order from 0.01 to 0.1 kg per ton of ore treated amines selected from the group of cocodiamine, or trioctylamine; said additions to aqueous dispersion of ore produce a float product of said mineral values by continuous agitation and aeration of the aqueous dispersion of ore; and separating and recovering the mineral values as froth concentrate products.

4,362,553

TOOL STEELS WHICH CONTAIN BORON AND HAVE BEEN PROCESSED USING A RAPID SOLIDIFICATION PROCESS AND METHOD

Ranjan Ray, Waltham, Mass.; Donald E. Polk, Washington, D.C., and Bill C. Giessen, Cambridge, Mass., assignors to Marko Materials, Inc., North Billerica, Mass.

Continuation-in-part of Ser. No. 95,381, Nov. 11, 1979, Pat. No. 4,318,733. This application Jun. 22, 1981, Ser. No. 275,629
Int. Cl.³ C22C *38/22, 38/24, 38/26, 38/32*
U.S. Cl. 75—0.5 BA 28 Claims

1. The iron base alloys having compositions described by the generalized formula $Fe_{Bal}Cr_{10\text{-}20}M_{5\text{-}20}C_{0.8\text{-}1.3}B_{0.8\text{-}1.3}$, where M is at least one of the group consisting of Mo, W, V, Cb and Ta, and where the iron may also contain incidental impurities.

4,362,554

METHOD AND APPARATUS FOR MANUFACTURING SPONGE IRON

Sven Santen, Hofors, Sweden, assignor to SKF Steel Engineering Aktiebolag, Hofors, Sweden

Filed Mar. 6, 1981, Ser. No. 241,396
Int. Cl.³ C22B *13/02;* F27B *1/08*
U.S. Cl. 75—11 19 Claims

1. A method of manufacturing sponge iron by the continu-

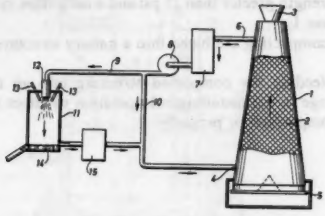
ous reduction of iron oxides in a shaft furnace comprising the steps of:

(1) removing the reaction gas from a shaft furnace;

(2) removing from said reaction gas substantially all CO_2 and H_2O;

(3) dividing the reaction gas into at least two flow portions;

(4) passing one of said flow portions to a gas generator comprising a plasma burner and means for injecting solid reducing agent and oxidant, and heating said reaction gas by said plasma burner and injecting into the heated gas solid reducing agent and oxidant so as to form an intermediate gas mixture comprised primarily of CO and H_2;



(5) maintaining said intermediate gas mixture at a temperature such that ash contained within the solid reducing agent forms a slag;

(6) mixing said intermediate gas with at least one of said other flow portions in such proportion that the temperature of the resulting reduction gas is suitable for the reduction of iron oxides in a shaft furnace;

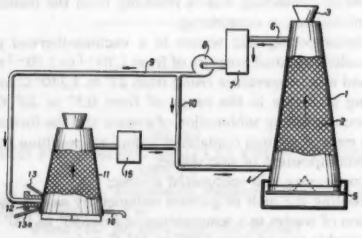
(7) injecting said reduction gas into the lower portion of a shaft furnace and passing said reduction gas upwardly through said shaft furnace so as to reduce iron oxides contained in said furnace; and

(8) removing from said furnace the reduced iron.

4,362,555
METHOD AND APPARATUS FOR MANUFACTURING SPONGE IRON

Sven Santen, and Börje Johansson, both of Hofors, Sweden, assignors to SKF Steel Engineering Aktiebolag, Hofors, Sweden

Filed Mar. 6, 1981, Ser. No. 241,397
Int. Cl.³ C22B *13/02*; F27B *1/08*
U.S. Cl. 75—11 **21 Claims**



1. A method of manufacturing sponge iron by the continuous reduction of iron oxides in a shaft furnace comprising the steps of:

(1) removing the reaction gas from a shaft furnace;

(2) removing from said reaction gas substantially all CO_2 and H_2O;

(3) dividing the reaction gas into at least two flow portions;

(4) passing one of said flow portions to a gas generator comprising a gas generating shaft substantially filled with a solid reducing agent, a plasma burner arranged in the lower portion of said shaft, and means for injecting oxidant, and heating said reaction gas by said plasma burner and injecting into the heated gas from the plasma burner an oxidant so as to form an intermediate gas mixture comprised primarily of CO and H_2;

(5) maintaining said intermediate gas mixture at a temperature such that ash contained within the solid reducing agent forms a slag;

(6) mixing said intermediate gas with at least one of said other flow portions in such proportion that the temperature of the resulting reduction gas is suitable for the reduction of iron oxides in a shaft furnace;

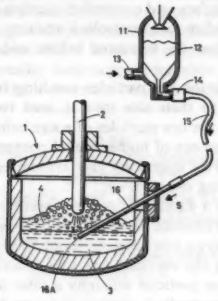
(7) injecting said reduction gas into the lower portion of a shaft furnace and passing said reduction gas upwardly through said shaft furnace so as to reduce iron oxides contained in said furnace; and

(8) removing from said furnace the reduced iron.

4,362,556
ARC FURNACE STEELMAKING INVOLVING OXYGEN BLOWING

Toshio Kishida, Nagoya, Japan, assignor to Daido Tokushuko, K.K., Nagoya, Japan

Filed Dec. 19, 1980, Ser. No. 218,174
Claims priority, application Japan, Dec. 19, 1979, 54-164012
Int. Cl.³ C21C *5/52*
U.S. Cl. 75—12 **7 Claims**



1. A method of steelmaking using an arc furnace characterized in that the method includes the steps of:

(a) blowing oxygen into the furnace throughout a melting period and an oxidizing period in an amount of at least 10 Nm^3 per charged ton calculated in terms of pure oxygen gas so as to decrease carbon content of a molten steel until it becomes 0.20% or less; and subsequently,

(b) blowing a carbonaceous material having a carbon content of at least 60% by weight into the molten steel in the furnace by utilizing flow of a carrier gas.

4,362,557
PURIFYING TITANIUM-BEARING SLAG BY PROMOTED SULFATION

Gerald W. Elger, and Ruth A. Holmes, both of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 27, 1981, Ser. No. 258,075
Int. Cl.³ C22B *7/04*
U.S. Cl. 75—24 **3 Claims**

1. A process for removing alkaline earth oxide impurities from a titania slag comprising:

admixing the slag with a promoter consisting essentially of sodium carbonate,

reacting the admixture with sulfur trioxide gas or a mixture of sulfur dioxide and oxygen gases at a temperature of

about 700° to 1100° C. to form a reaction product containing alkaline earth sulfates, and

leaching the alkaline earth sulfates from the reaction product with water.

4,362,558

PROCESS OF UPGRADING NICKELIFEROUS OXIDE ORES OF LATERITIC ORIGIN

Andre Desnoes, Plaisir; Jean-Jacques Predali, Elancourt, and Guy Ranchin, Versailles, all of France, assignors to Societe Metallurgique le Nickel-SLN, Paris, France

Continuation of Ser. No. 933,565, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 713,434, Aug. 11, 1976, abandoned. This application Sep. 22, 1980, Ser. No. 189,134

Claims priority, application France, Aug. 14, 1975, 75 25428

Int. Cl.[3] **C22B** *1/00;* **C22C** *38/08;* **B02C** *19/00;* **B07B** *1/00*

U.S. Cl. 75—40 **38 Claims**

1. A process for upgrading garnieritic ores to obtain an upgraded ore of higher nickel content comprising the steps of:

(a) subjecting a garnieritic ore in which about 80% of the ore particles have a size between about 5000 and 100 microns to a controlled attrition to produce fine particles whereby a ratio d_{90}/d_{10} measured after said controlled attrition is larger by a factor of at least 2.0 than a ratio of d_{90}/d_{10} measured before said controlled attrition and whereby d_{90} measured after said controlled attrition is no more than 75% less than d_{90} measured before said controlled attrition; and

(b) classifying the ore particles resulting from the attrition according to their size into at least two fractions and recovering the ore particles of a size below 50 microns as the upgrased ore of higher nickel content.

20. A process for upgrading garnieritic ores at least 0.5% in nickel, comprising the steps of:

(a) subjecting a garnieritic ore to a preliminary grinding or crushing to produce an ore in which about 80% of the ore particles have a size between about 5000 and 100 microns;

(b) subjecting the resultant ore to a controlled attrition to produce fine particles whereby a ratio d_{90}/d_{10} measured after said controlled attrition is larger by a factor of at least 2.0 than a ratio of d_{90}/d_{10} measured before said controlled attrition and whereby d_{90} measured after said controlled attrition is no more than 75% less than d_{90} measured before said controlled attrition; and

(c) classifying the ore particles resulting from the attrition according to their size into at least two fractions and recovering the ore particles of a size below 10 microns whereby a nickel recovery of at least 70% is accomplished.

37. A process for upgrading garnieritic ores to obtain an upgraded ore of higher nickel content, comprising the steps of:

(a) subjecting a garnieritic ore pulp in which about 80% of the ore particles have a size between about 5000 and 100 microns to a controlled attrition to produce fine particles whereby a ratio d_{90}/d_{10} measured after said controlled attrition is larger by a factor of at least 2.0 than a ratio of d_{90}/d_{10} measured before said controlled attrition and whereby d_{90} measured after said controlled attrition is no more than 75% less than d_{90} measured before said controlled attrition, said attrition being carried out in an agitating device in which the agitated volume of pulp passes through the agitating device between about 1,000 and 10,000 times per hour; and

(b) classifying the ore particles resulting from the attrition according to their size into at least two fractions and recovering the ore particles of a size below 50 microns as the upgraded ore of higher nickel content.

4,362,559

METHOD OF INTRODUCING ADDITION AGENTS INTO A METALLURGICAL OPERATION

Jesus W. Perez, Stamford, and Samuel S. Wang, Cheshire, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 9, 1981, Ser. No. 241,958

Int. Cl.[3] **C21C** *7/00*

U.S. Cl. 75—53 **11 Claims**

1. A method of introducing addition agents into a metallurgical operation which comprises:

(a) blending the addition agents under hot melt conditions with a modified tall oil pitch binder having a tensile strength greater than 25 psi and a deflection index greater than 1;

(b) compacting the blend into a unitary structure; and

(c) feeding the compacted structure into an appropriate stage in the metallurgical operation to effect the desired composition or property.

4,362,560

PROCESS FOR PRODUCING HIGH-PURITY GALLIUM

Vladimir N. Abrjutin, ulitsa V. Maslovka, 7, kv. 63, Moscow; Vyacheslav P. Ezhkov, ulitsa Lenina, 47, kv. 73, Svetlovodsk Kirovogradskoi oblasti; Raisa V. Ivanova, ulitsa Udaltsova, 14, kv. 181, Moscow; Oleg N. Kalashnik, ulitsa Lenina, 53, kv. 87; Vyacheslav A. Kirichenko, ulitsa Lenina, 37, kv. 53, both of Svetlovodsk Kirovogradskoi oblasti; Alexandr V. Peredereev, M. Filevskaya ulitsa 40, kv. 25, Moscow; Jury G. Pukhov, ulitsa Boguna, 9, kv. 36, Svetlovodsk Kirovogradskoi oblasti; Arkady A. Belsky, Komsomolsky prospekt, 48/22, kv. 20, Moscow; Vladimir V. Kozhemyakin, Sovetsky prospekt, 13, kv. 52, Ivanteevka Moskovskoi oblasti, and Galina E. Masjuk, ulitsa Egorova, 17, kv. 3, Svetlovodsk Kirovogradskoi oblasti, all of U.S.S.R.

Filed Nov. 28, 1980, Ser. No. 211,441

Int. Cl.[3] **C22B** *7/00, 30/04, 58/00*

U.S. Cl. 75—63 **7 Claims**

1. A process for producing high-purity gallium from gallium-arsenic-containing wastes resulting from the manufacture of semiconductors comprising:

a. decomposing said wastes in a vacuum-thermal process under a residual pressure of from 1.10^{-1} to 1.10^{-2} mm Hg and at a temperature rising from 25° to 1,150° C. on heating at a rate in the range of from 0.5° to 20° C./min, accomplishing sublimation of arsenic and the formation of a melt of gallium containing impurities resulting from the decomposition of said wastes;

b. condensing said sublimated arsenic;

c. cooling the melt of gallium obtained by said decomposition of wastes to a temperature of from 50° to 100° C. at a variable rate of from 0.05° to 15° C./min;

d. filtering said gallium melt at the cooling temperature of said melt;

e. hydrochemically treating said filtered melt of gallium;

f. fractionally crystallizing said melt in a multi-stage crystallization to crystallize said gallium;

g. the melt residues enriched with impurities being recycled from each process step to each preceding process step, and

whereby from 60 to 95%, by mass, of the starting gallium in each stage is recovered.

4,362,561

METHOD FOR THE SMELTING OF MATERIAL SUCH AS ORE CONCENTRATES

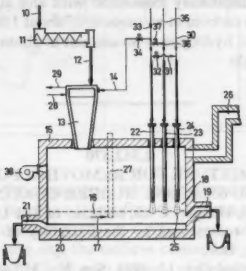
Horst Weigel, and Gerhard Melcher, both of Cologne, Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,592

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922189

Int. Cl.³ C22B *15/00*

U.S. Cl. 75—92 7 Claims



1. In a method for smelting an ore concentrate or the like in which said concentrate is first melted in an oxidizing atmosphere and the smelt is aftertreated with reducing gases to recover the metal values, the improvement which comprises:

melting said concentrate in substantially pure oxygen at a temperature of from 1500° to 2000° C.,

conducting the aftertreating by blowing reducing gases containing a mixture of a hydrocarbon fuel gas and oxygen, said oxygen being present in less than stoichiometric proportions, onto the smelt by means of a plurality of separate lances under conditions of high kinetic energy to create a blow impression under each lance, the reduction potential of the gases blown by each lance varying from one lance to the next, thereby producing a lighter slag phase and a heavier metal containing phase and

separately withdrawing said slag phase and said metal-containing phase.

4,362,562

METHOD FOR TAKING SAMPLES FROM PIG-IRON MELTS

Jacques J. P. Plessers, Helchteren, Belgium, assignor to Electro-Nite, Philadelphia, Pa.

Filed Feb. 20, 1981, Ser. No. 236,087

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006281

Int. Cl.³ G01N *25/02*

U.S. Cl. 75—130 R 8 Claims

1. A method of preparing a molten pig-iron sample for spectrometric analysis comprising:

inserting a sample-taking means into a pig-iron melt, said sample-taking means containing a quantity of misch metal;

removing said sample-taking means;

solidifying said molten pig-iron sample; and

analyzing said solidified sample.

4,362,563

PROCESS FOR THE PRODUCTION OF METALLIC FORMED MEMBERS

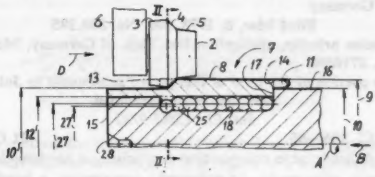
Jörg Stadler, Rückersdorf; Max Rentzsch, Schnaittach, and Siegfried Rhau, Nuremberg, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,530

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852659

Int. Cl.³ F42B *13/48*

U.S. Cl. 419—5 2 Claims



1. In a process for the production of formed member, including discrete particles embedded in a metallic matrix, the improvement comprising: arranging said particles intermediate a metallic basic support member and a metallic outer casing; embedding said particles in said basic support member and said outer casing through cold pressure rolling of said outer casing; and having pressure rollers work the material of the outer casing and the metallic basic support member during at least one roll pass into the interspaces between said particles.

4,362,564

METHOD FOR PRODUCING MICROPOROUS METAL BODIES

Joseph C. Danko, Danville, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 12, 1967, Ser. No. 668,744

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—222 1 Claim

1. A process for producing a microporous tungsten body adapted for use as cladding for the emitter in a thermionic converter containing fissile fuel, and which functions to permit the flow of fission product gases, but prevents the release of fissile fuel particles outside the emitter cladding, comprising the steps of: vapor-depositing, to a thickness of about 0.020 to 0.040 inch, on a suitable support surface, impure tungsten having a fluorine content of from about 40 to 100 ppm by hydrogen reduction of tungsten hexafluoride (WF_6); removing the support surface from the deposited tungsten; and heating said impure vapor-deposited tungsten in a vacuum environment of about 10^{-6} torr at a temperature of about 2500° C. for about 25 to 50 hours, so that grain boundary porosity occurs and becomes interconnected.

4,362,565

COLOR FORMER COMPOSITION

Reginald N. Pineger, Stockport, and Malcolm C. Clark, Cheadle, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 16, 1980, Ser. No. 197,446

Claims priority, application United Kingdom, Oct. 26, 1979, 7937264

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—21 5 Claims

1. A solid colour former composition comprising a colour former and from 0.1 to 10% by weight, based on the weight of the colour former, of an organic hydrophobic liquid which

does not react with the colour former selected from the group consisting of kerosene, partially hydrogenated terphenyl and mixtures thereof.

4,362,566

ONE-COMPONENT HARDENABLE SUBSTANCES STABLE TO STORAGE AND ACTIVATABLE BY MECHANICAL AND/OR PHYSICAL FORCES AND METHOD OF PRODUCING, ACTIVATING AND APPLYING SAME

Rudolf Hinterwaldner, Dachsberg 19, 8019 Moosach, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 884,395

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710548

The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.

Int. Cl.³ C08J *9/32*

U.S. Cl. 106—85 **21 Claims**

1. A hardenable composition comprising a hardenable monomeric, oligomeric, or polymeric component, a hardening agent therefore, wherein the hardenable component or hardening agent is contained in a reaction-hindering protective casing which can be ruptured by the usual pressure normally used in applying such compositions, and microhollow spheres which are of sufficient strength to withstand rupture by said normal pressure, the amount of said spheres being at least 1% by weight based on the weight of the hardenable component.

4,362,567

TISSUE ADHESIVE

Otto Schwarz; Yendra Linnau; Franz Löblich, and Thomas Seelich, all of Vienna, Austria, assignors to Immuno Aktiengesellschaft für chemisch-medizinische Produkte, Vienna, Austria

Filed Feb. 4, 1980, Ser. No. 118,529

Claims priority, application Austria, Feb. 15, 1979, 1189/79

Int. Cl.³ A61K *3/14*; C09J *3/24*

U.S. Cl. 106—157 **9 Claims**

1. A lyophilized tissue adhesive of mammalian protein origin which comprises fibrinogen, albumin, factor XIII, cold-insoluble globulin and plasminogen-activator inhibitor or plasmin inhibitor wherein the fibrinogen is present in at least 33% by weight, the ratio of factor XIII to fibrinogen, expressed in units of factor XIII per gram of fibrinogen is at least 80; and fibrinogen and albumin are present in a ratio of 33 to 90:5 to 40.

4,362,568

PETROLEUM DISTILLATE FREE PRIME COAT MATERIAL

Larry F. Ostermeyer, West Lafayette, Ind., assignor to K. E. McConnaughay, Inc., Lafayette, Ind.

Filed Oct. 6, 1980, Ser. No. 194,385

Int. Cl.³ C08L *93/00, 95/00*

U.S. Cl. 106—232 **20 Claims**

1. An essentially petroleum distillate-free prime coat emulsion, comprising 0 to about 40% asphalt cement, about 5% to about 45% tall oil, tall oil fractions, or mixtures thereof, the tall oil, fractions, or mixtures thereof being present in sufficient quantity that it comprises at least 20%, by weight, of the combined weight of the asphalt cement and tall oil, fractions or mixtures, about 40% to about 65% water, and about 0.2% to about 3% of a strong base, the tall oil, fractions, or mixtures thereof and the strong base functioning as an emulsifier or emulsifying agent.

4,362,569

SULFIDED CARBONACEOUS MATERIALS AND VULCANIZED AND VULCANIZABLE RUBBER COMPOSITIONS REINFORCED WITH SUCH CARBONACEOUS MATERIALS

Jon W. Martin, Los Alamitos, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 29, 1981, Ser. No. 278,275

Int. Cl.³ C09C *1/44*

U.S. Cl. 106—307 **11 Claims**

1. Sulfided carbonaceous material comprising carbon in an amount of about 80% to about 99% by weight; sulfided iron dispersed in, intimately associated with and at least partially bonded to the carbon, in an amount of about 1% to about 15% by weight; and hydrogen in an amount of about 0.1% to about 1.5% by weight.

4,362,570

SOLVENT MIXTURE FOR REMOVING POLYSULFIDE AND SILICONE RUBBER COATINGS

John J. Elwell, Hooper, Utah, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 13, 1981, Ser. No. 310,689

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—311 **1 Claim**

1. A solvent solution for effectively removing a cured, polysulfide or silicone rubber, protective coating formulation from a substrate, said solvent solution consisting essentially of a mixture of about 94 volume percent dichloromethane and about 6 volume percent chlorotrimethylsilane.

4,362,571

METHOD FOR REFINING SUGAR SOLUTIONS

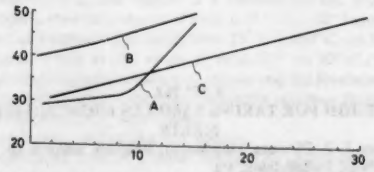
Yoshikatsu Ikari, Abiko; Shiyoichiro Yokoyama, Yatabemachi; Keisuke Katoh, Matsudo; Ryutaro Itaya, Noboribetsu, and Toshio Kaga, Chiba, all of Japan, assignors to Agency of Industrial Science & Technology; Sumitomo Jukikai Envirotech, Inc., both of Tokyo; Hokkaido Soda Co., Ltd., Sapporo and Mitsui Sugar Co., Ltd., Tokyo, all of, Japan

Filed May 27, 1981, Ser. No. 267,588

Claims priority, application Japan, May 27, 1980, 55/070628

Int. Cl.³ C13D *3/02, 3/12*

U.S. Cl. 127—55 **2 Claims**

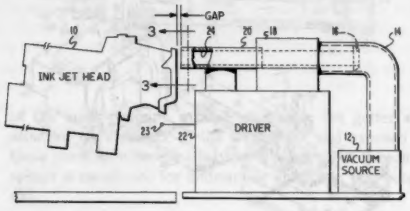


1. A method for refining sugar solutions, which comprises refining a sugar solution with magnesia to remove impurities, separating the used magnesia from the sugar solution, calcining the used magnesia together with pearlite and/or diatomaceous earth at least in an amount of the same weight as that of the magnesia, said calcining being at time and temperature sufficient to remove organic substances adsorbed on the magnesia during the refining, while retaining the adsorbing capacity of the magnesia, and using the resulting calcined mixture repeatedly for refining sugar solutions, with said calcining being performed after each refining.

4,362,572
METHOD AND APPARATUS FOR CLEANING INK JET PRINTER HEADS

Harry L. Wallace, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 25, 1981, Ser. No. 277,276
Int. Cl.³ B08B 7/04; G01D 15/18
U.S. Cl. 134—18 4 Claims



4. A method for cleaning an ink jet head and orifices in the head where the head and the orifices are contaminated by dust and ink from documents moved along a track of a document processing machine and the orifices contain air bubbles from ink provided from a hydraulic system, comprising:

providing a source of vacuum pressure;

coupling a first end of a conduit to said source of vacuum pressure and a second end of the conduit to the vicinity of the ink jet head and orifices to be cleaned;

determining when a vacuum should be applied by counting the documents passing along the track until a selected count is reached; and

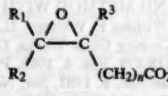
when the determination is made, applying said vacuum pressure through said conduit to remove dust, ink and air bubbles from the ink jet head and orifices, whereby the ink jet head is cleaned as required.

4,362,573
STABILIZED CHLORINATED SOLVENTS

William C. Mackrodt, Hale; Richard B. Jones, Weaverham, and Neil Winterton, Chester, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 28, 1980, Ser. No. 172,974
Claims priority, application United Kingdom, Aug. 7, 1979, 7927414
Int. Cl.³ B08B 5/00; C07C 17/42; C23G 5/02
U.S. Cl. 134—31 12 Claims

1. A solvent composition comprising 1,1,1-trichloroethane and a stabilising amount ranging from 0.05% to 5% by weight based on the weight of 1,1,1-trichloroethane of a stabilising agent, characterized in that the stabilising agent is an epoxide of the formula.



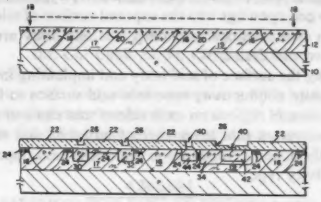
wherein R_1, R_2 and R_3, which may be the same or different, represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, and wherein R_1 or R_2 may also be a phenyl group or a benzyl group, n is 0 or 1, and R_4 is an alkyl group having 1 to 2 carbon atoms.

12. A method of degreasing articles which comprises bringing the articles into contact with a solvent composition as claimed in any one of claims 1 to 10, or the vapour thereof.

4,362,574
INTEGRATED CIRCUIT AND MANUFACTURING METHOD

Ara Gevondyan, Sunnyvale, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 9, 1980, Ser. No. 167,176
Int. Cl.³ H01L 7/54, 29/78
U.S. Cl. 148—1.5 1 Claim



1. A method for forming a field effect device having source and drain regions formed in a first region of a semiconductor material and a bipolar device having base, collector and emitter regions formed in a second, different region of the same semiconductor material, such field effect device having a buried channel region formed in the semiconductor material and spaced from a surface of such semiconductor material, such buried channel region having a conductivity type opposite the conductivity type of the semiconductor material, comprising the steps of:

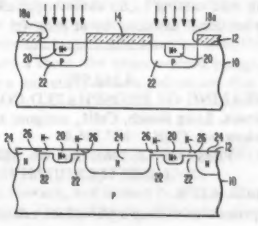
(a) forming a doped layer in the semiconductor material extending from the surface of the semiconductor material to the buried channel region, such doped layer extending laterally along the surface of the semiconductor material through the source and drain regions of the field effect device and the emitter and base regions of the bipolar device, such doped layer having the same conductivity type as the conductivity type of the semiconductor material; and,

(b) forming a gate electrode electrically connected to both the formed doped layer and the semiconductor material.

4,362,575
METHOD OF MAKING BURIED CHANNEL CHARGE COUPLED DEVICE WITH MEANS FOR CONTROLLING EXCESS CHARGE

Lloyd F. Wallace, Coatesville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1981, Ser. No. 297,055
Int. Cl.³ H01L 27/10, 21/263
U.S. Cl. 148—1.5 9 Claims



1. A method of making a buried channel CCD on a body of semiconductor material of one conductivity type, said method comprising:

forming an oxide layer over a surface of the body and applying a mask over the surface of said oxide layer;

forming openings through said mask and said oxide layer to expose surface regions of the body where drains are to be formed and implanting ions of the opposite conductivity type through said openings into the exposed surface regions of said body to form drains extending into said body a predetermined distance from said surface;

enlarging the size of said openings to expose an additional area of said surface around each of said drains and implanting ions of said one conductivity type through said enlarged openings into the exposed surface of said body to form channel stops extending into said body around and below said drains;

exposing the surface of said body and implanting ions of said opposite conductivity type into said surface to form buried channel regions on each side of said channel stops and to convert a thin layer thereof adjacent said surface to lightly doped compensation regions of said opposite conductivity type.

4,362,576

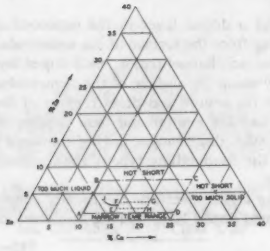
METHOD OF MAKING TIN-BASE BODY SOLDER AND PRODUCT

Douglas J. Harvey, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 113,559, Jan. 21, 1980, Pat. No. 4,248,905. This application Jun. 16, 1980, Ser. No. 160,135

Int. Cl.³ C22F *1/16*

U.S. Cl. 148—2 **5 Claims**



1. A method of manufacturing a tin-base alloy suitable for use in filling a depression in a fabricated steel surface, said tin-base alloy consisting essentially of about 15 to 20 weight percent copper, about 2 to 3 weight percent zinc and the balance tin, said method comprising

casting a homogeneous melt of the alloy,

cooling said casting at a rate sufficient to form in the alloy microstructure a dendrite secondary arm spacing between about 1 to 10 microns, and

working said casting to an extent equivalent to reducing a cross-sectional diameter by at least 4:1.

4,362,577

SEALING OF PHOSPHATED COATINGS

John P. Jones, Long Beach, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Oct. 13, 1981, Ser. No. 310,660

Int. Cl.³ C23C *1/10*

U.S. Cl. 148—6.15 R **21 Claims**

1. The process of sealing a phosphate coating on a metal that includes

(a) wetting the phosphate coated metal with a composition consisting essentially of an aqueous acidic solution containing at least one member selected from the group consisting of hypophosphorous acid and sodium hypophosphite,

(b) and then drying the thus wetted phosphate coated metal.

4,362,578

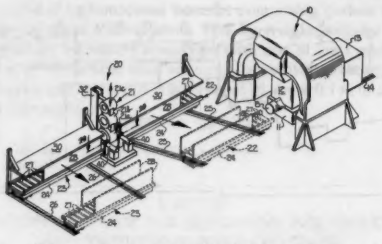
METHOD OF HOT WORKING METAL WITH INDUCTION REHEATING

Gary L. Mills, Monroe, and B. Dean Bowen, Matthews, both of N.C., assignors to Teledyne Industries, Inc., Monroe, N.C.

Filed Oct. 16, 1980, Ser. No. 197,493

Int. Cl.³ C21D *8/00*

U.S. Cl. 148—11.5 N **10 Claims**



1. In a process for hot working a workpiece formed of a metal having an optimum hot working temperature range, said process comprising initially heating the workpiece throughout to an elevated temperature within said optimum hot working temperature range and thereafter hot working the heated workpiece by deformation until outer portions of the workpiece become chilled, thereby necessitating reheating prior to further hot working, the combination with said hot working process of an improvement for producing finer and more uniform grain size in said workpiece, said improvement comprising subjecting the chilled workpiece to electric induction heating at a frequency preselected to concentrate the induced heat in the chilled outer portions of the workpiece to thereby rapidly reheat the workpiece to the optimum hot working temperature throughout so that continued hot working can be reinitiated before appreciable grain growth can occur.

4,362,579

HIGH-STRENGTH-CONDUCTIVITY COPPER ALLOY

Masahiro Tsuji, Urawa, Japan, assignor to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1980, Ser. No. 219,617

Claims priority, application Japan, Dec. 25, 1979, 54-167517

Int. Cl.³ C22F *1/08*

U.S. Cl. 148—11.5 C **2 Claims**

1. A method of producing electrical parts such as switches, terminals and connectors, which comprises forming said electrical parts from a copper alloy having high strength and excellent electrical conductivity, corrosion resistance, and spring qualities, said alloy consisting of about 0.4–8 weight % nickel, about 0.1–3 weight % silicon, about 10–35 weight % zinc, concomitant impurities and the remainder copper.

4,362,580

FURNACE AND METHOD WITH SENSOR

William T. Kane, and William P. Whitney, II, both of Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 118,479, Feb. 4, 1980, Pat. No. 4,290,586. This application Apr. 6, 1981, Ser. No. 251,535

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16 **6 Claims**

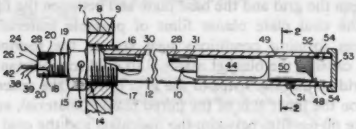
1. A method of heat treating metal workpieces in a non-oxidizing gas atmosphere containing platinum group metal contaminants, which method comprises

heat treating the workpieces in the atmosphere,

during the heat treatment, passing sequential portions of the atmosphere into contact with a platinum group metal contaminant getter consisting essentially of platinum

group metal and thereby effecting gettering of the contaminants from those portions,

thereafter passing those portions into contact with an electroded portion of an oxygen sensor comprising a solid oxygen-ion-conductive electrolyte with a film electrode



of the same platinum group metal as in the getter and attached on a surface of the electrolyte and exposed to those portions whereby the oxygen potential of the atmosphere is monitored for undesirable change in that potential.

4,362,581

MAGNETIC ALLOY

Hiroshi Kimura; Kenji Abiko; Takashi Sato; Isamu Yoshii; Sadao Watanabe, and Yutaka Takei, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 91,033, Nov. 5, 1979, Pat. No. 4,299,622. This application Jan. 30, 1981, Ser. No. 229,990
Claims priority, application Japan, Feb. 5, 1980, 55-12710
Int. Cl.³ C04B *35/00*
U.S. Cl. 148—31.55 **2 Claims**

1. A magnetic alloy sheet containing not less than 0.03 weight percent but not more than 5.0 weight percent of P, not less than 0.01 weight percent but not more than 5.0 total weight percent of at least one element of Ti, Nb, and Zr, not less than 2.5 weight percent but not more than 10.0 weight percent of Si, and the remaining part consisting mainly of Fe, said alloy having been slow cooled after casting to cause P to be present on the grain boundaries thereof in an amount of more than 0.5 weight percent of the atoms which form said grain boundaries.

4,362,582

METHOD OF PRODUCING MICROPOROUS JOINTS IN METAL BODIES

Joseph C. Danko, Danville, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 12, 1967, Ser. No. 668,743
Int. Cl.³ B22F *5/00*
U.S. Cl. 148—127 **3 Claims**

1. A process for making a microporous vent at the interface of a joint between two metals having different diffusion coefficients comprising the steps of :

forming an intimate contact interface joint between two metals, one of the two metals having a higher diffusion coefficient than the other of the two metals and selected from the group consisting of molybdenum, tantalum, niobium, vanadium, rhenium, molybdenum-50 weight % rhenium, and niobium-vanadium, the other metal of the two metals having a lower diffusion coefficient being selected from the group consisting of tungsten and tungsten-25 weight % rhenium,

heating the thus joined metals to a temperature below their melting point but high enough to cause atoms of the one of the two metals having the higher diffusion coefficient to migrate into the other of the two metals having the lower diffusion coefficient, and

maintaining the joint metals in the heated condition for a period of time sufficient for voids resulting from the migration of atoms to become interconnected, thereby producing microporous vents at the interface of the joint between the two metals.

4,362,583

1,9-DIAZIDO-2,4,6,8-TETRANITRO-2,4,6,8-TETRAZANONANE

Ronald A. Henry, China Lake, and William P. Norris, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 21, 1981, Ser. No. 256,230
Int. Cl.³ C06B *25/34*; C07C *117/00*
U.S. Cl. 149—92 **2 Claims**

2. An energetic composition comprising 80% by weight of cyclotetramethylenetetranitramine and 20% by weight of 1,9-diazido-2,4,6,8-tetranitor-2,4,6,8-tetrazanonane.

4,362,584

METHOD FOR BINARY PROPELLANT

Michael K. Levenson, Tempe, Ariz., assignor to Pyrodex Corporation, Shawnee Mission, Kans.

Filed Sep. 3, 1980, Ser. No. 183,856
Int. Cl.³ D03D *23/00*
U.S. Cl. 149—109.6 **1 Claim**

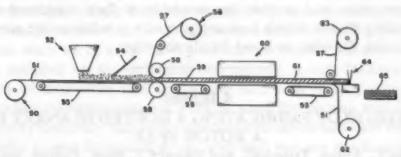
1. A method for preparing a binary propellant having reduced sensitivity which comprises subjecting a mixture of a powdered oxidizing component and a powdered fuel component to mild shear action for a period of time sufficient to produce a heterogeneous propellant composition having an unconfined critical propagation diameter of greater than one-sixteenth inch.

4,362,585

UNIAXIALLY ORIENTED NYLON FILM AS CARRIER WEB FOR FIBER REINFORCED PLASTICS

Ferdinand A. de Antonis, Fogelsville, and Alfieri Degrassi, Pottsville, both of Pa., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 31, 1981, Ser. No. 297,647
Int. Cl.³ B29J *5/00*; B32B *17/00, 31/00*
U.S. Cl. 156—62.2 **22 Claims**



1. In a method of manufacturing fibrous reinforced resin sheet, of the type wherein a composition comprising a resin and fibrous reinforcement is fed onto a carrier web, the composition is formed into a sheet, the improvement comprising the carrier web being a uniaxially drawn polyamide film.

4,362,586

POLYAMIDE AS A PRIMER FOR USE WITH ASPHALTIC MEMBRANES

William E. Uffner, Newark, and Robert N. White, Etna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 7, 1980, Ser. No. 205,032
Int. Cl.³ E04B *2/00*; E01C *7/06*
U.S. Cl. 156—71 **9 Claims**

1. In a method comprising applying a primer to a cementitious substrate and applying an asphaltic membrane to said primer, the improvement wherein said primer is a polyamide.

4,362,587

PROCESS OF FORMING A MULTI-PLY LAMINATE

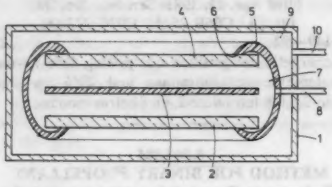
Pol Baudin, Fontaine l'Eveque; Pierre Collignon, and Claude Gillieaux, both of Charleroi, all of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Nov. 24, 1980, Ser. No. 209,972

Claims priority, application United Kingdom, Nov. 27, 1979, 7940865

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—87 13 Claims



1. A process of forming a multi-ply laminate which comprises at least one thermoplastic structural ply forming an outer ply of the laminate, said process comprising degassing and bonding steps during which gas is removed from between assembled structural plies of the laminate and the plies are heated to cause them to bond together while a moulding plate is in contact with the or each exposed thermoplastic ply, characterised in that during the degassing step, the assembled plies are subjected to a sub-atmospheric environmental pressure having an absolute value of 150 mm Hg or less while the inter-ply space or spaces is or are subjected to a sub-atmospheric pressure at the edges of the assembly (hereinafter called "edge pressure") to degas the assembly, said edge pressure and said environmental pressure being maintained at such values as to give rise to a separation of the plies of the assembly which is attributable to the mean inter-ply gas pressure being higher than the environmental pressure while the assembly of plies is heated to a temperature below that at which effective adherence commences between the thermoplastic material and a said adjacent ply, in that the degassed assembly remains subject to sub-atmospheric edge pressure while its temperature is increased past the temperature at which said effective adherence commences and in that the assembly is then subjected to a bonding step in which heat and pressure conditions are such as to cause the plies to bond firmly together.

4,362,588

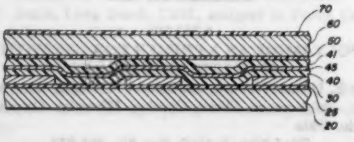
METHOD OF FABRICATING A DUCTED BLANKET FOR A ROTOR SPAR

John C. Anton, Trumbull, and Edward J. Bush, Easton, both of Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 169,590, Jul. 17, 1980, abandoned. This application Aug. 31, 1981, Ser. No. 297,643

Int. Cl.³ B23P *15/04;* B32B *31/20*

U.S. Cl. 156—219 3 Claims



1. In the fabrication of impervious fiberglass blankets for spars of rotor blades which are hollow and pressurized with a gas which passes through any flaw in the spar, resulting in an internal pressure drop to indicate the flaw, wherein the blankets are molded with slots on the inner side thereof forming venting ducts for said gases, the improvement whereby spar-to-blanket adhesion is enhanced, comprising, for vacuum forming between a base plate and a caul plate, preparing over a grid of spaced-apart strips a plurality of sheets of flexible fiberglass pre-impregnated with a thermosetting resin, the grid when removed forming the slots in the molded blanket, inserting between the grid and the base plate and between the fiberglass and the caul plate planar films of peelable material, under vacuum forming conditions heat setting the thermosetting resin, causing the blanket material to conform substantially to the grid so that the strips of the grid provide the spaced-apart slots on the inner side of the cured blanket material, and causing the planar film between the fiberglass and the caul plate to adhere to the top of the resulting blanket and the planar film between the fiberglass in the slots of the grid and the base plate to adhere to the bottom blanket surfaces, protecting said surfaces from mold release and from outside contamination until the blanket is bonded to the spar and internal rotor blade surfaces when the planar films, being sacrificial, are removed, thereby maximizing the bond between the spar and the blanket and between the blanket and rotor blade internal surfaces.

4,362,589

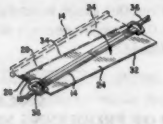
METHOD OF MANUFACTURE OF TAPERED WOOD I-BEAM

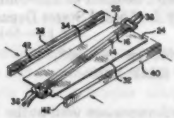
Joe Smith, Boise, and Stanley J. Willmorth, Eagle, both of Id., assignors to Trus Joist Corporation, Boise, Id.

Filed Nov. 27, 1981, Ser. No. 325,132

Int. Cl.³ B32B *31/00;* E04B *7/02, 1/32*

U.S. Cl. 156—254 20 Claims





1. A method of manufacture of tapered wood beams, comprising the steps of:

forming a substantially I-shaped beam with a wood web member of substantially uniform width secured at its opposite sides to a first pair of flange members;

cutting said uniform width web member longitudinally into a pair of tapered width web members each with one of said first pair of flange members secured thereto;

fastening said first pair of flange members together to position the two cut edges of said pair of tapered web members outwardly of said first flange members and substantially parallel to each other to provide a web and flange assembly;

securing a second pair of flange members to the cut edges of said pair of tapered web members; and

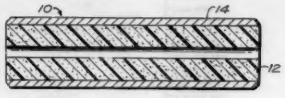
unfastening said first pair of flange members to disassemble the assembly and to provide a pair of tapered beams.

4,362,590

HYBRID PISTON PIN

Howard D. Driver, Raleigh, N.C., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 51,682, Jun. 25, 1979, Pat. No. 4,311,406. This application Jul. 6, 1981, Ser. No. 280,947
Int. Cl.³ B29C 19/00
U.S. Cl. 156—294 7 Claims



1. A method of making a pin for a pin-jointed reciprocating mechanism comprising:

forming a fiber-reinforced resin core member having at least 50% of continuous fibers therein, said fibers being oriented at a predetermined angle of orientation of between about 0° to about ±25° with respect to the longitudinal axis of said core;

inserting said core in a tubular metal sleeve, said sleeve and core being of predetermined dimensions to provide a prestressed, snug fit of said core in said sleeve;

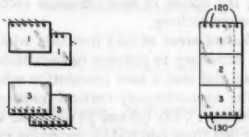
heating said core and sleeve at elevated temperatures and for a time sufficient to post-cure said resin of said core and to relieve said stress of said snug fit.

4,362,591

LARGE POSTER APPARATUS AND METHOD OF CONSTRUCTING FOR BACK-LIGHTED SIGNBOARD

Charles H. Tracy, 16515 Kingswood Dr., Lakeville, Minn. 55044

Continuation-in-part of Ser. No. 99,071, Nov. 30, 1979, Pat. No. 4,244,769. This application Aug. 19, 1980, Ser. No. 179,490
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.³ G09F 15/00
U.S. Cl. 156—300 5 Claims



1. A method of constructing a large poster from a plurality of sheets containing image portions, for use on a back-lighted signboard, comprising the steps of

(a) immersing the plurality of poster sheets in a liquid solution of a type which renders said sheets light translucent, and removing the sheets from said solution and drying them;

(b) aligning a first group of adjacent image sheets in abutting image edge alignment;

(c) overlaying the edge-aligned sheets with a clear film layer having adhesive surfaces

(d) overlaying the clear film layer with a second group of matching image sheets and aligning said sheets in image registration with said first group of sheets; and

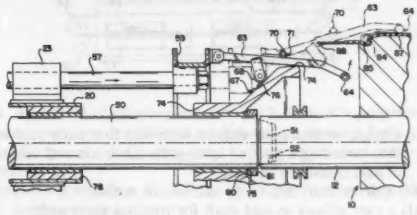
(e) forming a laminated whole from said first group, said clear film layer, and said second group.

4,362,592

PLY TURN-UP MEANS IN A TIRE BUILDING MACHINE

Donald B. Ruppel, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,637
Int. Cl.³ B29H 17/22
U.S. Cl. 156—402 6 Claims



1. In a tire building machine, a tire building drum having axially disposed support ends, a pair of support members on either side of said machine, a spindle mounted in each of said support members, one of said spindles moveable axially in one of said support members, the other one of said spindles being secured to the other one of said support members, ply turn-up means mounted on each of said support members for axial movement to and from said tire building drum, a first bracket means connected to said one spindle for movement therewith, a second bracket connected to said other one of said spindles, power operated means mounted on each of said brackets and operatively connected to said ply turn-up means for moving said ply turn-up means, cam means journaled on each of said spindles for movement axially on said spindles to and from said tire drum, power drive means interconnecting said one support member to said first bracket means for selective actuation for moving said first bracket means and said one spindle to chuck up said tire drum in cooperation with said other stationary spindle, a plurality of circumferentially spaced arms pivotally mounted on said ply turn-up means, said arms extending axially outwardly around each of said cam means to define a set of arms, each set of arms having an annular expansible and rollable member on the outboard end thereof, a cam follower on each of said arms and contacting said cam means, a spring member encompassing each set of arms for biasing said arms radially inwardly and being operative to move said cam means axially to and from said drum with said tire ply stock turn-up means, each of said cam means being moveable axially relative to said turn-up means, each of said spindles having stop means for limiting the axial movement of said cam means during axial movement of said turn-up means, and said power operated means operative upon actuation for moving said turn-up means axially toward said tire drum and operative to effect a predetermined radial movement to said expansible and rollable member and a stitching of the edge of ply stock on said drum upon contact of said cam means with said stop means.

4,362,593

WALKING-BEAM BAND SEALER

John J. Grevich, Star Prairie, Wis., assignor to Nordson Corporation, Amherst, Ohio

Filed Nov. 17, 1980, Ser. No. 207,148
Int. Cl.³ B30B 15/34
U.S. Cl. 156—498 9 Claims

1. Apparatus for sealing layers of thermoplastic film together, comprising:

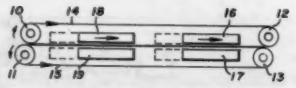
(a) conveyor means for transporting at least two juxtaposed

layers of thermoplastic film along a first path from an inlet site to a discharge site;

(b) motor means for causing continuous operation of said conveyor means in a first direction at a predetermined velocity;

(c) sealing and cooling heat transfer members disposed in normally spaced relation proximate said conveyor means so that said film moves in the space between said members;

(d) carriage means connected to said motor means for causing reciprocating motion of said heat transfer members



along a second path aligned with said first path, said motion including a portion having the direction and velocity of said conveyor means;

(e) a drive shaft driven by said motor means;

(f) a cam affixed to said shaft for rotation therewith;

(g) a cam followr arm coupling said cam to said carriage means; and

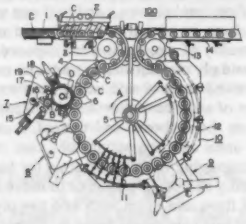
(h) means on said carriage means for moving said heat transfer members reciprocally in a direction transverse to said first path at predetermined points in said reciprocating motion of said carriage member along said second path.

4,362,594

APPARATUS FOR STICKING LABELS TO CONTAINERS

Yasuaki Nagano, Kanazawa, and Toshiaki Naka, Tatsunokuchi, both of Japan, assignors to Shibuya Kogyo Co., Ltd., Ishikawa, Japan

Filed Mar. 19, 1981, Ser. No. 245,452
Claims priority, application Japan, Jun. 2, 1980, 55-74112
Int. Cl.³ B31F *1/00*
U.S. Cl. 156—567 **8 Claims**



1. A label sticking apparatus for sticking labels to containers such as bottles and cans comprising:

a main body;

transporting means provided on said main body for transporting said containers along a predetermined path;

driving means for driving said transporting means, said driving means including a driving gear formed integrally with said transporting means; and

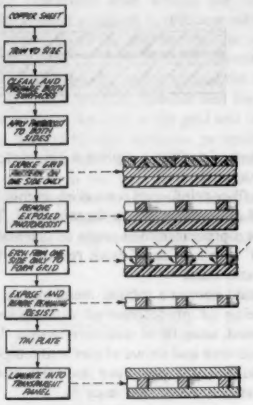
at least one label application device detachably mounted on said main body for applying labels to said containers transported by said transporting means, said label application device including a timing gear and lock means which is engageable with said timing gear, said lock means setting said timing gear in an unrestrained condition to bring said timing gear into mesh with said driving gear when said label application device is mounted on said main body; whereas, said lock means setting said timing gear in a restrained condition when said label application device is dismounted from said main body.

4,362,595

SCREEN FABRICATION BY HAND CHEMICAL BLANKING

Jack E. Skog, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 19, 1980, Ser. No. 150,735
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 **11 Claims**


COPPER SHEET
TRIM TO SIZE
CLEAN AND PREPARE BOTH SURFACES
APPLY PHOTORESIST TO BOTH SIDES
EXPOSE GRID PATTERN ON ONE SIDE ONLY
REMOVE EXPOSED PHOTORESIST
ETCH THRU ONE SIDE ONLY TO FORM GRID
EXPOSE AND DEVELOP RESIST
THIN PLATE
LAMINATE INTO THICKNESS

1. A method of preparing a screen from a thin metal foil having thin wire strands with uninterrupted electrical conductivity in all directions comprising the steps of:

(a) applying photosensitive coatings to first and second sides of said foil to form an adherent, etchant resistant coating thereon;

(b) exposing a pattern in said coating on said first side to light and removing solubilized exposed areas of said coating whereby a grid pattern of an unexposed, protective, etchant resistant coating corresponding to the desired screen pattern remains on said first side of said foil with areas of said foil exposed;

(c) applying by hand under visual observation a chemical etchant to said exposed areas of said foil on said first side when said foil is in an approximately vertical position;

(d) observing the action of said chemical etchant to identify areas of uneven etching;

(e) rinsing selected areas of said first side with a neutralizing fluid when necessary to prevent further etching;

(f) rotating said foil into a new orientation while maintaining the foil in the approximately vertical position;

(g) repeating steps (c), (d), (e) and (f) until said screen has been properly etched from said foil by removing exposed areas of said foil;

(h) rinsing said chemical etchant from said grid;

(i) removing all remaining coating on said first and said second sides of said foil; whereby a screen grid remains having unimpeded conductivity in all directions.

4,362,596

ETCH END POINT DETECTOR USING GAS FLOW CHANGES

Brian H. Desilets, Wappingers Falls, and Thomas A. Gunther, Hopewell Junction, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

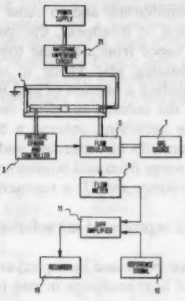
Filed Jun. 30, 1981, Ser. No. 279,127
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—627 **11 Claims**

1. A method of detecting etch end point in reactive ion etching, comprising the steps of,

monitoring the rate of flow of etchant species into a reactive ion etching reaction chamber wherein said rate of flow of

etchant species into said chamber is a function of gas species pressure within said chamber; and

detecting etch end point by monitoring changes in the rate of flow of etchant species into said chamber with said



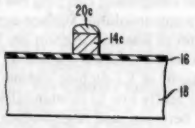
changes in the rate of flow of etchant species into said chamber being indicative of changes in the partial pressure of constituent species within said chamber caused by changes in the material being etched.

4,362,597

METHOD OF FABRICATING HIGH-CONDUCTIVITY SILICIDE-ON-POLYSILICON STRUCTURES FOR MOS DEVICES

David B. Fraser, Berkeley Heights; Eliezer Kinsbron, Highland Park, and Frederick Vratny, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 19, 1981, Ser. No. 226,104
Int. Cl.[3] H01L *21/308, 21/314*
U.S. Cl. 156—643 7 Claims



1. A method of fabricating high-conductivity silicide-on-polysilicon structures in an MOS device, said method comprising the steps of

forming a high-resolution pattern overlying a polysilicon layer of said device to define selected regions of said layer,

depositing a metal-containing layer on top of said pattern and on said selected regions, the metallic constituent in said layer being selected from the group consisting of titanium, tantalum, molybdenum, tungsten, nickel and cobalt, which metal-containing layer is of the type that, upon sintering, will form a silicide,

lifting off said pattern thereby leaving on said device only the metal-containing layer deposited on said selected regions,

sintering said remaining metal-containing deposits to form composite silicide-on-polysilicon structures in said selected regions,

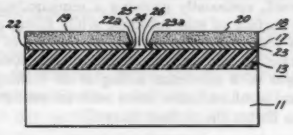
and, utilizing said sintered metal-containing deposits as an etch-resistant mask, anisotropically etching said polysilicon layer to remove all portions thereof except said silicide-on-polysilicon structures.

4,362,598

METHOD OF PATTERNING A THICK RESIST LAYER OF POLYMERIC PLASTIC

Bruce F. Griffing, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,619
Int. Cl.[3] B44C *1/22;* C03C *15/00, 25/06;* C23F *1/02*
U.S. Cl. 156—643 1 Claim



1. A method of forming in a first thick layer of a polymeric plastic overlying a surface of a substrate, an opening having a pair of opposed sides spaced apart by a predetermined distance comprising:

providing said first thick layer of polymeric plastic on said surface of said substrate,

forming a second thin layer of titanium on said first layer,

forming a third thin layer of a resist having a pair of retained portions and a removed portion on said second layer, the adjacent edges of said pair of retained portions spaced apart by said predetermined distance,

etching said second layer through said removed portion of said third layer to form an opening in said second layer exposing the surface of said first thick layer of polymeric plastic, the walls of said opening underlying said third layer and spaced from said adjacent edges of said retained portions of said third layer, adjacent edges of the exposed portion of said surface of said first thick layer being spaced apart by substantially said predetermined distance, said second layer of titanium being plasma etched in carbon tetrachloride and immediately thereafter etched in a mixture of fluoroboric acid and water in a ratio of 1 part of fluoroboric acid to 10 parts of water by volume,

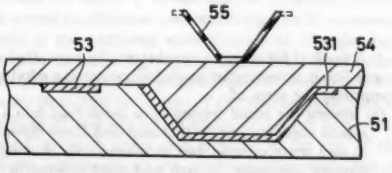
reactive ion etching in oxygen said first layer of polymeric plastic through said opening in said second layer to form an opening in said first layer extending to said substrate, opposed walls of said opening in said first layer being spaced apart by substantially said predetermined distance.

4,362,599

METHOD FOR MAKING SEMICONDUCTOR DEVICE

Ichiro Imaizumi, Hinodemachi; Masatoshi Kimura, Hachioji, and Keijiro Uehara, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 950,671, Oct. 12, 1978, Pat. No. 4,278,987.
This application Feb. 23, 1981, Ser. No. 236,841
Claims priority, application Japan, Oct. 17, 1977, 52-123474; Dec. 26, 1977, 52-173999; Aug. 28, 1978, 53-103944
Int. Cl.[3] H01L *21/306*
U.S. Cl. 156—647 10 Claims



1. A method for preparing semiconductor devices, which comprises the steps of forming a layer of a substance acting as

an etching mask on a substrate having a surface on the (100) crystal plane or on a plane inclined within 5° against the (100) crystal plane, opening on said substrate layer a window having a polygonal shape having main sides parallel to at least one specific direction selected from the direction of the <100> crystal axis and directions inclined within 25° against the <100> crystal axis, thereby forming an etching mask, etching the interior of said window with an anisotropic etching solution, thereby forming a substrate having a dent, removing said etching mask, epitaxially growing a semiconductor layer on the entire surface of said substrate while filling up said dent, masking a secondary dent formed by transfer of said dent of the substrate on said epitaxially grown semiconductor layer with a layer of a substance acting as an etching mask, and etching said semiconductor layer with an anisotropic etching solution to flatten the surface thereof.

4,362,600

USE OF POLYALKYLENE OXIDES FOR THE SEPARATION OF CELLULOSE FIBRES

Tom S. C. Lindström, Sollentuna, and Lennart H. Westman, Saltsjö-Boo, both of Sweden, assignors to AB CASCO and Svenska Traforskningsinstitutet, both of Stockholm, Sweden

PCT No. PCT/SE80/00347, § 371 Date Aug. 12, 1981, § 102(e) Date Aug. 12, 1981, PCT Pub. No. WO81/02030, PCT Pub. Date Jul. 23, 1981

PCT Filed Dec. 23, 1980, Ser. No. 293,212

Claims priority, application Sweden, Dec. 23, 1980, 8000141

Int. Cl.³ D21C *9/00*

U.S. Cl. 162—55 **5 Claims**

1. A method of separating unbleached sulphate fibers from an aqueous suspension of fibre mixtures including unbleached sulphate fibres, which method comprises adding to the suspension a polyalkylene oxide having a molecular weight above 50,000 in an amount sufficient to essentially selectively flocculate said unbleached sulphate, whereby said unbleached sulphate fibres may be subsequently removed.

4,362,601

METHOD FOR DISTILLING ETHYL ALCOHOL BY ADDING SALT OR SALTS

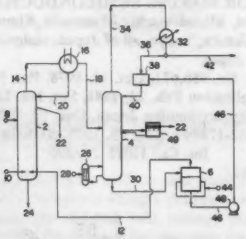
Minoru Morita, Kodaira, Japan, assignor to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 213,797

Claims priority, application Japan, Dec. 22, 1979, 54-166301

Int. Cl.³ B01D *3/38*

U.S. Cl. 203—19 **11 Claims**



1. A method for recovering substantially pure ethyl alcohol from a liquid, fermentation mash feed containing ethyl alcohol, comprising the steps of:

(a) feeding the liquid fermentation mash feed into a steam-heated mash column so that said feed flows downwardly in said mash column and simultaneously flowing steam directly upwardly through said mash column in contact with said feed to remove the ethyl alcohol from said feed, discharging from the top of the mash column an overhead fraction consisting essentially of ethyl alcohol and water, and discharging from the bottom of the mash column less volatile impurities initially present in said feed which would otherwise hinder recovery of a regenerated salt solution usable in the following step (b);

(b) feeding said overhead fraction into a rectifying column, simultaneously feeding into said rectifying column near the top thereof one or more salts effective to improve the vapor-liquid equilibrium and to cause the ethyl alcohol-water azeotrope to disappear, discharging substantially pure alcohol vapor from near the top of said rectifying column, condensing said vapor to obtain liquid ethyl alcohol and feeding a portion of said liquid ethyl alcohol to the top of the column as reflux, recovering from the bottom of the rectifying column a bottom component consisting essentially of water and said salt or salts;

(c) evaporating water from said bottom component to obtain separately (1) steam and (2) a regenerated, concentrated salt solution;

(d) recycling said regenerated salt solution for use in step (b); and

(e) using the steam produced in step (c) as a part of the steam used for direct heat exchange in step (a).

4,362,602

PROCESS FOR THE TREATMENT OF HEAVY PRODUCTS RESULTING FROM THE MANUFACTURE OF CHLOROHYDROCARBONS

Roland Hembersin, Jemeppe-sur-sambre, and Remy Nicaise, Nalinnes, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Continuation of Ser. No. 127,260, Mar. 4, 1980, abandoned. This application Jul. 14, 1981, Ser. No. 283,188

Claims priority, application France, Mar. 12, 1979, 79 06674

Int. Cl.³ B01D *3/38*

U.S. Cl. 203—59 **7 Claims**

1. In a process for the treatment of the heavy products resulting from the manufacture of chlorohydrocarbons, which products consist essentially of high-boiling chlorohydrocarbons found in the stills of distillation columns used for the separation and purification of chlorohydrocarbons, in which the heavy products are subjected to steam distillation to form a top fraction comprising light chlorinated products and a bottom fraction comprising high boiling chlorohydrocarbons, the improvement comprising carrying out the distillation in the presence of a water-insoluble surface-active agent having a solubility in water of less than 1 gram per liter when the water is in equilibrium with a solution containing 10 grams per liter of surface-active agent in 1,2-dichloroethane at 20° C.; said solubility being sufficiently low to substantially preclude formation of an emulsion between said high boiling chloroydrocarbons and water.

4,362,603

CONTINUOUS ACETONITRILE RECOVERY PROCESS

Robert D. Presson, Bedford; Hsin-Chih Wu, Parma, both of Ohio, and Edward J. Sockell, Port Lavaca, Tex., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 2, 1981, Ser. No. 222,196

Int. Cl.³ B01D *3/36*

U.S. Cl. 203—75 **12 Claims**

1. A continuous process for recovering highly pure acetonitrile from crude acetonitrile by-produced during amoxidation of propylene containing acetonitrile, water, HCN and heavy organics, said process comprising:

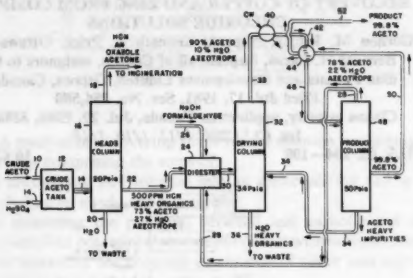
(1) distilling said crude acetonitrile in a first distillation zone at a first pressure at or above 1 atmosphere to remove HCN therefrom and produce a first acetonitrile/water azeotrope and a first bottoms product containing water,

(2) distilling said first azeotrope in a second distillation zone at a second pressure less than 1 atmosphere to separate said first azeotrope into a second bottoms product containing water and a second acetonitrile/water azeotrope

having a greater acetonitrile concentration than said first azeotrope, and

(3) distilling said second acetonitrile/water azeotrope in a third distillation zone at a third pressure above 1 atmosphere to produce a third acetonitrile/water azeotrope containing substantially all of the water in said second azeotrope, third bottoms product comprising acetonitrile and heavy organics and a sidestream comprising said highly pure acetonitrile of at least 95%.

12. A process for recovering highly pure acetonitrile from a first acetonitrile/water mixture by-produced during amoxidation of propylene containing about 15 weight percent or more water comprising:



(1) distilling said first mixture in a first distillation zone at a first pressure below 1 atmosphere to produce a water-containing bottoms product and a second acetonitrile/water mixture comprising an azeotrope of acetonitrile and water more concentrated in acetonitrile than said first mixture,

(2) distilling said second mixture at a second pressure above 1 atmosphere to produce a third acetonitrile/water mixture comprising an azeotrope of acetonitrile and water less concentrated in acetonitrile than said second mixture and said highly pure acetonitrile of at least 95%, and

(3) recycling said third mixture so that said third mixture is distilled along with said first mixture.

4,362,604

PROCESS FOR THE PREPARATION OF PYROCATECHOL AND HYDROQUINONE

Christoph Jupe, Cologne; Helmut Waldmann, Leverkusen; Jürgen Baumert, Cologne, and Günther Schümmer, Stommeln, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 14, 1981, Ser. No. 292,854

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1980, 3031736

Int. Cl.³ B01D *3/14*

U.S. Cl. 203—75 **13 Claims**

1. In a process for the recovery of pyrocatechol and hydroquinone from a reaction mixture obtained by reacting phenol with a percarboxylic acid having 1 to 4 carbon atoms at a molar ratio of phenol to percarboxylic acid, before the reaction, of 5 to 50:1 in which the reaction mixture comprising unreacted phenol, carboxylic acid corresponding to the percarboxylic acid, pyrocatechol and hydroquinone is worked up in a plurality of rectification apparatuses, the improvement wherein:

(a) the reaction mixture is continuously fed to a first rectification column at a point between the stripping section and the rectifying section, the rectification column having up to 20 separation stages in the stripping section and 5 to 30 separation stages in the rectifying stage, the column being operated at a pressure between 0.01 and 2 bars, between 20 and 95% by weight of the top product or the same quantity by weight of phenol or a product stream containing phenol from the process or the same quantity by weight of a mixture of top product and phenol and/or product stream containing phenol, from the process, being condensed and returned to the first rectification column as liquid reflux, withdrawing a top product comprising phenol and carboxylic acid corresponding to the percarboxylic acid employed in the reaction, withdrawing a bottom product comprising pyrocatechol, hydroquinone and phenol, recovering pyrocatechol and hydroquinone from the bottom products; and

(b) feeding the top product of the first rectification column continuously into a second rectification column at a point between the stripping section and the rectifying section, the second rectification column having 5 to 35 separation stages in the rectifying section and 8 to 35 separation stages in the stripping section, said second rectification column being operated under a pressure between 0.02 and 2 bars, 20 to 95% by weight of the product collecting at the head of said second rectification column being condensed as liquid reflux and recycled to the top of the column, withdrawing a top product, substantially free of phenol and comprising carboxylic acid corresponding to the percarboxylic acid and taking off substantially pure phenol from the stripping section and/or the bottom of the column, whereby high boiling oxidation products of the phenol remain disolved and blockages are avoided.

13. In a process for the recovery of pyrocatechol and hydroquinone from a reaction mixture obtained by reacting phenol with a percarboxylic acid having 1 to 4 carbon atoms at a molar ratio of phenol to percarboxylic acid, before the reaction, of 5 to 50:1 in which the reaction mixture comprising unreacted phenol, carboxylic acid corresponding to the percarboxylic acid, pyrocatechol and hydroquinone is subjected to a further treatment and then worked up in a plurality of rectification apparatuses, the improvement wherein:

(a) the reaction mixture is continuously fed to a first rectification column at a point between the stripping section and the rectifying section, the rectification column having up to 20 separation stages in the stripping section and 5 to 30 separation stages in the rectifying stage, the column being operated at a pressure between 0.01 and 2 bars, between 20 and 95% by weight of the top product or the same quantity by weight of phenol or a product stream containing phenol from the process or the same quantity by weight of a mixture of top product and phenol and/or product stream containing phenol, from the process, being condensed and returned to the first rectification column as liquid reflux, withdrawing a top product comprising phenol and carboxylic acid corresponding to the percarboxylic acid employed in the reaction, withdrawing a bottom product comprising pyrocatechol, hydroquinone and phenol, recovering pyrocatechol and hydroquinone from the bottom products; and

(b) feeding the top product of the first rectification column continuously into a second rectification column at a point between the stripping section and the rectifying section, the second rectification column having 5 to 35 separation stages in the rectifying section and 8 to 35 separation stages in the stripping section, said second rectification column being operated under a pressure between 0.02 and 2 bars, 20 to 95% be weight of the product collecting at the head of said second rectification column being condensed as liquid reflux and recycled to the top of the column, withdrawing a top product, substantially free of phenol and comprising carboxylic acid corresponding to the percarboxylic acid and taking off substantially pure phenol from the stripping section and/or the bottom of the column.

4,362,605

SENSOR FOR MEASURING THE OXYGEN CONTENT IN THE EXHAUST GAS OF COMBUSTION ENGINES AND METHOD THEREOF

Alfred Bozon, Erlensee; Edgar Koberstein, Alzenau; Hans-Dieter Pietka, Freigericht, and Herbert Voelker, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,774

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937802

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—1 T 6 Claims

1. In a sensor for the measurement of the oxygen content in the exhaust gas of internal combustion engines, wherein the solid substance electrolyte sensor element which serves as a producer of electrical sensor signals is fitted with a catalytically active gas permeable wrapping spaced apart from and not in contact with said sensor element, the improvement wherein the wrapping consists of at least one layer of wire gauze of an alloy containing iron, chromium and aluminum surrounding a perforated protection tube surrounding said sensor element, said wire gauze being coated with an intermediate layer of metal oxide promoting catalysis and said intermediate layer being impregnated with a metal of the platinum group or with a combination of at least one platinum group metal and at least one base metal.

6. A method for the production of a voltage corresponding to the residual oxygen concentration in the exhaust gases of internal combustion engines as a value for adjustment of the composition of the air/fuel ratio, comprising inserting into the exhaust line of an internal combustion engine, the probe as defined in claim 1, and thereby causing a voltage to be generated which imparts a signal to the controller of the fuel/air mixture for control thereof.

4,362,606

PROCESS FOR SIMULTANEOUS RECOVERY OF VANADIUM, MOLYBDENUM AND GALLIUM FROM ALUMINA FACTORY ALUMINATE LIQUORS

Gabor Sinka; Mihaly Miskei, both of Budapest; Ferenc Toth; Laszlo Revesz, both of Almasfüzito, and Miklos Schlegel, Tata, all of Hungary, assignors to Magyar Aluminiumipari Troszt, Budapest, Hungary

Filed Nov. 6, 1980, Ser. No. 204,536

Int. Cl.³ C25F *11/04*; C25C *1/22*

U.S. Cl. 204—105 R 1 Claim

1. An electrolytic process for recovering vanadium and molybdenum in the form of a precipitate of their alkali-insoluble lower valent oxides and for recovering gallium in the form of an alloy from an alumina factory aluminate liquor containing vanadium, molybdenum and gallium in solution, said electrolytic process comprising the steps of immersing in the alumina factory aluminate liquor which forms an electrolyte, a low-melting alloy cathode containing at least two elements selected from the group which consists of bismuth, lead, tin and cadmium, capable of alloying with gallium, and an anode comprising an alkali-insoluble metal surrounded by an alkali-proof diaphragm; and electrolyzing the alumina factory aluminate liquor forming the electrolyte at a temperature exceeding 70° C. with a current density of 400 to 1200 A/m^2 while mechanically agitating the cathode to form the precipitate and to alloy the gallium into the cathode.

4,362,607

RECOVERY OF COPPER AND ZINC FROM COMPLEX CHLORIDE SOLUTIONS

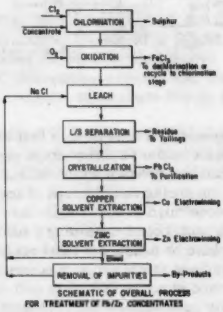
Gordon M. Ritcey, Nepean; Kenneth T. Price, Ottawa, and Bernard H. Lucas, Nepean, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jul. 17, 1981, Ser. No. 284,580

Claims priority, application Canada, Jul. 29, 1980, 358800

Int. Cl.³ C25C *1/12, 1/16, 1/18*

U.S. Cl. 204—108 16 Claims



SCHEMATIC OF OVERALL PROCESS FOR TREATMENT OF Pb/Zn CONCENTRATES

1. A process for separating and recovering copper and zinc from aqueous chloride solutions containing lead, copper, zinc and impurities, comprising:

(a) separating lead from the aqueous chloride solution by at least one of crystallization, precipitation, and solvent extraction;

(b) solvent extracting the resulting aqueous solution with a first water-immiscible organic liquid comprising a copper-chelating extractant reagent to load copper into the organic phase;

(c) scrubbing the Cu-loaded organic phase with at least one aqueous liquid selected from water and Na_2SO_4 solution to remove impurities;

(d) stripping the Cu from this first organic phase with aqueous $CuSO_4$-H_4SO_4 solution and passing the Cu-containing sulphate strip solution to a Cu electrowinning stage;

(e) scrubbing this stripped organic phase with water to remove sulphate, and recycling this organic liquid to extraction stage (b);

(f) solvent extracting the remaining aqueous chloride solution with a second water-immiscible organic liquid comprising tributylphosphate to load zinc thereon;

(g) scrubbing the Zn-loaded organic phase with aqueous $ZnCl_2$-NaCl solution to remove impurities;

(h) stripping the Zn from this second organic phase with aqueous $ZnCl_2$-HCl solution and passing the Zn-containing chloride strip solution to a Zn electrowinning stage; and

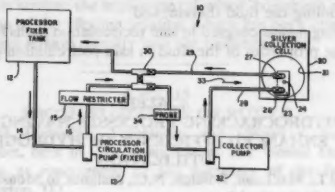
(i) separating impurities from the residual aqueous phase sufficiently to avoid detrimental build-up thereof, and recovering chloride solution for recycle.

4,362,608

SILVER RECOVERY METHOD

Don L. Biles, Chamblee, and A. Alan Richardson, Lilburn, both of Ga., assignors to Silver Systems, Ltd., Atlanta, Ga.

Division of Ser. No. 135,674, Mar. 31, 1980, Pat. No. 4,287,044.
This application May 22, 1981, Ser. No. 266,303
Int. Cl.[3] C25C *1/20*
U.S. Cl. 204—109 5 Claims



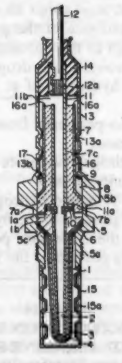
1. A method of recovering silver from a solution containing silver ions comprising the steps of:
(a) introducing said solution into an electroplating cell including an anode and a cathode;
(b) measuring the potential between said cathode and a controlled potential electrode in contact with said solution to determine the presence or absence of silver ions adjacent to said cathode;
(c) responsive to presence of silver ions adjacent to said cathode, applying a plating potential across said anode and cathode to drive a plating current between said anode and said cathode;
(d) terminating said plating potential after discrete period of time; and
(e) repeating steps (b), (c) and (d).

4,362,609

OXYGEN CONCENTRATION SENSOR

Hiromi Sano, Nagoya; Masatoshi Suzuki; Masahiro Hamaya, both of Anjo, and Masami Ouki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 23, 1981, Ser. No. 246,435
Claims priority, application Japan, May 29, 1980, 55-72282
Int. Cl.[3] G01N *27/58*
U.S. Cl. 204—195 S 9 Claims



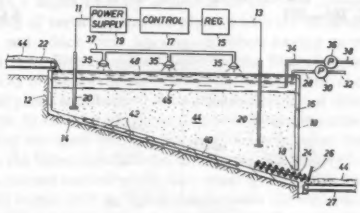
1. An oxygen concentration sensor comprising:
a solid electrolyte member including two portions, one portion being exposed to a gas of interest and the other portion being exposed to the atmosphere;
an inner cover member formed with a first space communicating portion arranged to communicate with said other portion of said solid electrolyte member;
a water-proof cover member enclosing said inner cover member and defining with said inner cover member a ventilating passage, said water-proof cover member being formed with a second space communicating portion for maintaining the first space communicating portion of said inner cover member in communication with the atmosphere through said ventilating passage, said second space communicating portion of said water-proof cover member being axially spaced apart from said first space communicating portion of said inner cover member; and
means, disposed in said ventilating passage between said first and second space communicating portions and spaced axially from said first space communicating portion, for impeding the flow of water through said ventilating passage.

4,362,610

APPARATUS FOR RECOVERY OF HYDROCARBONS FROM TAR-SANDS

Neil L. Carpenter, 175 Nimitz Rd., Kerrville, Tex. 78208

Division of Ser. No. 913,629, Jun. 8, 1978, Pat. No. 4,204,923.
This application May 19, 1980, Ser. No. 151,181
Int. Cl.[3] C25B *9/00*; C10G *1/00*; B01D *43/00*
U.S. Cl. 204—263 26 Claims



1. Apparatus for recovering the bitumen component of a mined earth aggregate including
a naturally occurring electrolyte dispersed therein,
retaining means for receiving and retaining a preselected volume of the mined earth aggregate containing the bitumen and an electrolyte dispersed therein, said retaining means further providing electrical insulation for the mined earth aggregate from substantially all other earth (formation) materials adjacent thereto,
a plurality of electrodes inserted into said mined earth aggregate and in electrical contact with said electrolyte dispersed therein,
an AC electrical current source interconnected to each of said electrodes for establishing an AC current flow through said electrolyte for electrochemically breaking the molecular bond of the bitumen and electrolyte from the earth aggregate and releasing the bitumen and electrolyte therefrom in a liquid form,
recovering means cooperating with the upper levels of said retaining means for recovering said released bitumen in a liquid form from said retaining means,
means for removing said released electrolyte from said retaining means, and
means for removing the remaining earth aggregate material from said retaining means from the bottom of said retaining means.

4,362,611

QUADRUPOLE R.F. SPUTTERING SYSTEM HAVING AN ANODE/CATHODE SHIELD AND A FLOATING TARGET SHIELD

Joseph S. Logan, Poughkeepsie; Steve I. Petvai, Wappingers Falls, and Cornel Rosu, Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,452
Int. Cl.³ C23C 15/00
U.S. Cl. 204—298 12 Claims

1. A quadrupole sputtering system comprising:

a chamber adapted to be evacuated and to maintain a low pressure ionizable gas therein;

a cathode electrode, disposed in said chamber, with a source target surface therein;

an anode electrode, in said chamber, adapted for mounting work piece substrates thereon, with said anode electrode disposed in face-to-face sputtering relationship with said target surface of said cathode electrode;

a spaced ground shield circumscribing said cathode electrode;

an electrically floating shield circumscribing said target surface; and

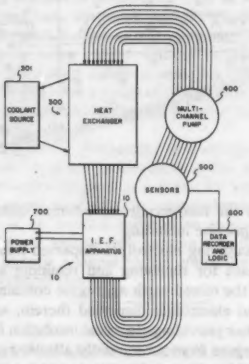
means for applying an operating potential between said cathode and anode electrodes for sputtering of material from said target surface on said substrates.

4,362,612

ISOELECTRIC FOCUSING APPARATUS

Milan Bier, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 897,261, Apr. 18, 1978, Pat. No. 4,204,924. This application Dec. 3, 1979, Ser. No. 99,499
Int. Cl.³ B01D 13/02; G01N 27/26
U.S. Cl. 204—301 6 Claims



1. Apparatus for isoelectric focusing, comprising, in combination:

an enclosure having a plurality of inlet ports and a plurality of associated outlet ports opposing said inlet ports;

a plurality of recirculation paths, each coupling an outlet port to a respective inlet part;

a fluid within said enclosure and said recirculating paths, said fluid containing buffering components capable of establishing a pH gradient in an electric field;

inlet and outlet separator means for respectively separating the flow of fluid which enters at said inlet ports and exists at said outlet ports;

a plurality of ion non-selective permeable membranes disposed between respective ones of said inlet and outlet separator means and oriented generally parallel to the direction of flow of said fluid so as to streamline the flow of fluid as between said inlet and outlet separator means while allowing interchange of fluid constituents therebetween;

means for applying an electrical potential transverse the direction of flow of said fluid in said enclosure to establish a gradient of pH steps as between successive channels defined by said membranes;

a multichannel pump for pumping the fluid in said recirculation paths;

a heat exchanger coupled to said recirculation paths for cooling the fluid therein; and

sensing means coupled to said recirculation paths for sensing the properties of the fluid in said recirculation paths.

4,362,613

HYDROCRACKING PROCESSES HAVING AN ENHANCED EFFICIENCY OF HYDROGEN UTILIZATION

Donald L. MacLean, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 13, 1981, Ser. No. 243,273
Int. Cl.³ C10G 47/00, 49/22
U.S. Cl. 208—108 1 Claim

1. A process for catalytically hydrocracking a hydrocarbonaceous feed comprising:

(a) cracking in a hydrocracking zone the hydrocarbonaceous feed in the presence of hydrogen and a hydrocracking catalyst under hydrocracking conditions comprising a temperature of at least about 250° C. and a pressure of at least about 45 atmospheres absolute wherein said hydrocracking zone has a hydrocracking vapor phase and a hydrocracking liquid phase wherein said hydrogen is provided by a hydrogen feed gas to produce a hydrocrackate, and wherein the hydrogen feed gas is provided in an amount sufficient to maintain a concentration of hydrogen in the hydrocracking vapor phase of at least about 65 volume percent;

(b) separating the hydrocrackate into at least one liquid phase and a separated vapor phase, said separated vapor phase being at a temperature less than about 70° C. and a pressure of at least about 0.5 times the pressure in the hydrocracking zone, the separated vapor phase has a concentration of hydrogen of at least 65 volume percent;

(c) bringing at least a portion of said separated vapor phase into contact with a feed side of a polymeric membrane selective to the permeation of hydrogen as compared to methane;

(d) maintaining the opposite side of the polymeric membrane at a pressure of at least about 20 atmospheres below the pressure at the feed side of the polymeric membrane to permeate hydrogen to the opposite side of the polymeric membrane and provide a hydrogen permeate having a concentration of hydrogen of at least about 90 volume percent;

(e) withdrawing non-permeate from the feed side of the polymeric membrane;

(f) removing the hydrogen permeate from said opposite side of the polymeric membrane;

(g) compressing the removed hydrogen permeate to a sufficient pressure for passage to the hydrocracking zone; and

(h) then recycling the hydrogen permeate to the hydrocracking zone as a portion of the hydrogen feed gas.

4,362,614

MERCAPTAN EXTRACTION PROCESS WITH RECYCLED ALKALINE SOLUTION

George Asdigian, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 30, 1981, Ser. No. 259,296
Int. Cl.³ C10G 19/02, 19/08
U.S. Cl. 208—235 7 Claims

1. In a process for the removal of mercaptans from a hydrocarbon stream in which the feed stream is contacted with an

alkaline solution comprising water and an alkaline reagent in an extraction zone to effect transfer of mercaptans from the feed stream to the alkaline solution; the resultant mercaptan-containing alkaline solution is contacted with oxygen in an oxidation zone in the presence of an oxidation catalyst to effect oxidation of mercaptans to disulfides; the resultant disulfides are separated from the alkaline solution by decantation; and a portion of the decanted alkaline solution is contacted with a gas stream under conditions which promote transfer of water into the gas stream: the improvement which comprises passing the portion of the alkaline solution which has been contacted with the gas stream directly into the oxidation zone.

4,362,615

FROTH FLOTATION OF RUTILE

Thomas O. Llewellyn, Tuscaloosa, and Gerald V. Sullivan, Northport, both of Ala., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 15, 1981, Ser. No. 311,487
Int. Cl.³ B03D 1/14
U.S. Cl. 209—167 **7 Claims**

1. A froth flotation process for recovery of rutile from copper ore tailings comprising:

(a) flotation of sulfides and carbonates at a pH of about 9 to 10, using sodium isopropyl xanthate and sodium oleate as collectors, and dextrin as rutile depressant, and

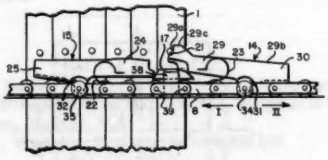
(b) flotation of rutile from the tailings of step (a) at a pH of about 2 to 3, using hydrofluoric acid as a rutile selectivity-assisting agent and water-soluble petroleum sulfonate as rutile collector.

4,362,616

APPARATUS FOR MOVING THE FILTER PLATES OF A FILTER PRESS

Gerd-Peter Gehrmann, Gerlafingen, and Peter Spiegel, Oberbuchsiten, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed Mar. 27, 1981, Ser. No. 248,045
Claims priority, application Switzerland, Apr. 30, 1980, 3351/80
Int. Cl.³ B01D 25/12
U.S. Cl. 210—225 **7 Claims**



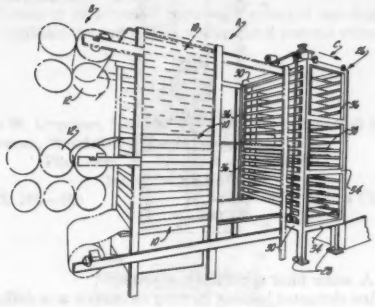
1. In a filter press having a plurality of plates adapted to be arranged in abutting relationship in an operating position and to be separated from said position for cleansing, replacement or the like, each of said plates being provided with a pin extending laterally from two opposite side edges thereof, apparatus for separating the plates one at a time comprising a pair of first and a pair of second reciprocable link chain conveyors arranged with one each of said first and second reciprocable link chain conveyors respectively along said opposite side edges of said plates, said first conveyors carrying first engaging means comprising a driving lever and a stop lever, said levers being two-armed, pivotable and spring-biased and having a cam mounted between them, and said second conveyors carrying a second engaging means comprising a retaining lever having a pin engageable with said cam, said conveyors and their associated engaging means for providing that when moved in one direction, each of said first conveyors and first engaging means act to move the first of said plates from said operating position by engagement of said driving levers with the pins attached to said first plate while each of said second conveyors and second engaging means when moved in an opposite direction act to retain the second of said plates in the operating position by engagement of said retaining levers with the pins attached to said second plate.

4,362,617

LIQUID FILTERING APPARATUS

Constant L. Klepper, Troy, Mich., assignor to Micronic Filtration Inc., Warren, Mich.

Filed May 6, 1981, Ser. No. 261,252
Int. Cl.³ B01D 25/14
U.S. Cl. 210—225 **25 Claims**

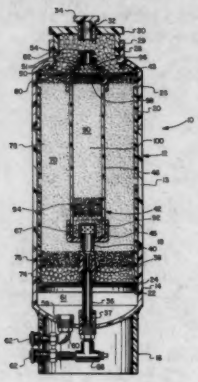


1. In a liquid filtering apparatus of the type comprising a plurality of vertically stacked plates which are vertically separable and which form filtering chambers having an inlet for liquid to be filtered and an outlet for the filtered liquid and a plurality of supply rolls of filter media in sheet form at one side of said plates and from which a continuous strip of filter media extends to between the separable plates, an apparatus for extracting the used filter media sheet from between the plates when the latter are separated and for simultaneously feeding a fresh, unused section of the filter sheet downstream from each of said supply rolls to the spaces between the separated plates comprising a rigid frame on the opposite downstream side of said plates, a plurality of vertically spaced and generally parallel spaced filter sheet supports on said frame each forming a generally flat surface onto which the used portion of the filter sheet is adapted to be advanced from between the separated filter plates, said support surfaces being narrower than the filter sheet and aligned therewith so that the opposite edges of the filter sheet extend laterally outwardly beyond the opposite longitudinal edges of said support surfaces, a vertically extending carriage mounted on said frame for linear movement in a path generally parallel to said support surfaces, a plurality of vertically spaced clamps on opposite sides of said carriage aligned generally with said support surfaces, said clamps being located laterally outwardly of the opposite longitudinal edges of said support surfaces and in alignment with the opposite longitudinal edges of the filter sheets, said clamps having vertically separable jaws thereon adapted, when closed, to positively grip the sheets along the opposite side edge portions thereof and means for opening and closing said clamps and for reciprocating the carriage lengthwise of the frame such that when the carriage is in its retracted position adjacent the downstream side of said plates the clamps close to engage and grip the opposite edge portions of the filter sheets, the carriage then advances in a downstream direction to extract a section of each used filter sheet from between the separated plates and advances it along said supporting surface and simultaneously fresh sections of the filter sheets are unwound from the supply rolls and drawn into the space between the separated plates.

4,362,618
WATER FILTER

Don E. Cook, and Dorothy M. Cook, both of P.O. Box 452, Greenville, Tex. 75401

Continuation-in-part of Ser. No. 125,584, Feb. 29, 1980, Pat. No. 4,301,009. This application May 27, 1981, Ser. No. 267,470
Int. Cl.³ B01D *23/10*
U.S. Cl. 210—275 14 Claims

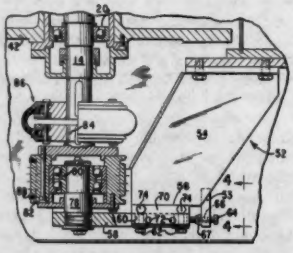


1. A water filter apparatus comprising:
a first elongated housing forming an interior area defining an inlet chamber and a primary filter chamber;
foraminous wall means disposed in said housing and forming a common wall between said chambers;
an inlet conduit in communication with said inlet chamber;
a second elongated housing disposed within said primary filter chamber, said second housing forming a secondary filter chamber;
an outlet conduit extending from said second housing to the exterior of said first housing, said outlet conduit being in communication with said secondary filter chamber;
a first member forming a screen between said outlet conduit and said secondary filter chamber; and
a plurality of layers of filter media in said primary and secondary chambers for filtering water flowing through said filter between said conduits.

4,362,619
CONTINUOUS CENTRIFUGAL MACHINE

Joseph B. Bange, Hamilton, Ohio, assignor to The Western States Machine Company, Hamilton, Ohio

Filed Jan. 21, 1980, Ser. No. 113,980
Int. Cl.³ B04B *9/00*
U.S. Cl. 210—360.1 3 Claims

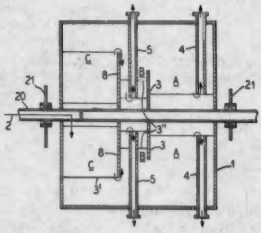


1. In a continuous centrifugal machine including a rigid base structure, a bearing housing, a normally vertical basket shaft journalled for rotation on bearings in said bearing housing, a basket secured to the upper end of said shaft for rotation therewith, a stationary curb wall surrounding said basket, means for resiliently mounting said bearing housing on said base structure so as to permit gyration of said basket about a point on the axis of said shaft, and rotary drive means including a motor mounted to one side of said curb wall and means connecting said motor with the lower end of said shaft for rotating said basket continuously at high speed, the improvement wherein said connecting means comprises:
a non-rotary support shaft mounted in adjustably fixed position beneath and substantially aligned with said basket shaft;
anti-friction rotary bearing means mounted on said support shaft and a driven belt pulley supported on said support shaft through said bearing means for rotation about the axis of said support shaft;
driving belt means connecting said driven pulley with a driving pulley driven by said motor;
a stub shaft fixed to said driven belt pulley for rotation coaxially therewith;
mounting means constantly positioning and sustaining the loads on said support shaft, said mounting means being displaceable to and settable in a position thereof in which the axis of the driven pulley and stub shaft is held aligned with the rest position of the axis of the lower end of the basket shaft; and
flexible coupling means interconnecting said stub shaft and the lower end of said basket shaft for directly transmitting torque yet permitting angular and parallel misalignment therebetween; whereby moment loads are removed from said bearing housing mounting means and gyration of said basket shaft is unrestrained by and does not alter the driving moment of said belt means.

4,362,620
PARTITIONED CENTRIFUGE

Robert E. High, 358[b] Monavale Rd., St. Ives, New South Wales, 2075, Australia

Filed Mar. 11, 1980, Ser. No. 129,390
Claims priority, application Australia, Mar. 15, 1979, PD8035; May 2, 1979, PD8612
Int. Cl.³ B01D *45/14*
U.S. Cl. 210—378 21 Claims



1. A centrifuge for the continuous separation of solid-liquid mixtures and mixtures of liquid with different densities, said centrifuge having a drum with end walls, said drum being rotatable about a hollow stationary centrally disposed shaft, said centrifuge comprising:
a first disc mounted on said shaft inside said drum and radially extending a first distance from said shaft and terminating in an outer edge beyond the boundary layer between the phases to be separated;
a second disc mounted on said shaft inside said drum and radially extending a second distance from said shaft and terminating in an outer edge,
said second distance being less than said first distance, and

said first and second discs dividing the interior of said drum into a first chamber between one end wall of said drum and said first disc, a second chamber between said first and second discs, and a third chamber between said second disc and another end wall of said drum;

a means for charging said first chamber with a mixture to be separated,

whereby a lighter of said phases flows from said first chamber around said first disc upon rotation of said centrifuge and is collected in said second chamber, and a heavier of said phases is collected in said third chamber; and

a discharge means for each of said second and third chambers for respectively discharging said lighter and said heavier phases therefrom to an exterior of said centrifuge.

13. A solid-sleeve worm centrifuge for the continuous separation of solids-liquids mixtures and mixtures of liquids of varying densities comprising:

a generally cylindrical vessel having a vertical wall at one end thereof and a conical taper at an opposite end thereof;

a means for rotating said vessel;

a spiral carried on the interior surface of said vessel, said spiral extending along the entire length of said vessel in a direction of liquid flow therein;

an inlet means for charging said vessel with a mixture to be separated;

a first partition mounted in the interior of said vessel substantially parallel to said vertical wall of said vessel and extending a first distance into the mixture to be separated;

a second partition mounted in the interior of said vessel downstream of said first partition and substantially parallel thereto, said second partition extending a second distance into the mixture to be separated,

said second distance being less than said first distance;

whereby said first and second partitions in combination with said vessel form a first chamber for the hydrostatic collection of a light phase and a second chamber for the hydrostatic collection of a heavy phase in substantially pure form,

a discharge means extending into said first chamber for removal of said light phase therefrom;

a discharge means extending into said second chamber for removal of said heavy phase therefrom; and

a discharge means disposed near an apex of said conical taper for discharging sediment collected and carried by said spiral.

4,362,621
RADIAL FLOW CELL

Robert W. Dobna, Rahway; B. Allen Mayles, Manalapan, and Thomas H. Stoudt, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 27, 1981, Ser. No. 258,109
Int. Cl.³ B01D *35/22*
U.S. Cl. 210—450 2 Claims

1. An improved radial flow cell of the type having

(a) a feeding plate with means for feeding a heterogeneous broth;

(b) a filter plate with means for filtration; and

(c) a sealing means for securing the feeding plate and the filtrate plate together so as to form a leak-proof cell, wherein the improvement comprises means for feeding which further comprises

(1) two or more circumferentially located inlet ports for feeding a heterogeneous broth;

(2) a circular groove for receiving via connecting orifices the broth from the inlet ports and thereby generating a radial flow of broth;

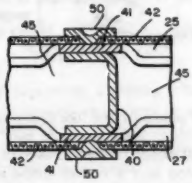
(3) a dam attached to the periphery of the bottom surface of the feeding plate and facing the connecting orifices for enlarging the radius of the radial flow from the circular groove; and

(4) two or more outlet ports with enlarged openings to facilitate the exit of the concentrated process stream.

4,362,622
FILTER

Burton W. Urquhart, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff, N.J.

Filed Mar. 30, 1981, Ser. No. 248,700
Int. Cl.³ B01D *33/26*
U.S. Cl. 210—486 4 Claims

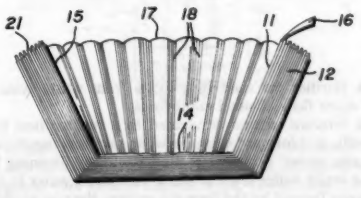


1. A filter for removing liquid from a slurry comprising: a metal filter screen support; a metal filter screen on the metal filter screen support, said filter screen support having openings adjacent the filter screen for the flow of filtrate into the support, and at least one drainage duct for draining the filtrate from the support; and a plurality of metal members on top of the filter screen, each metal member being welded through the screen and attached to the support.

4,362,623
COFFEE FILTER SYSTEM

Vaino J. Holopainen, Cross Rd., P.O. Box 49, East Sullivan, N.H. 03445

Continuation of Ser. No. 77,568, Sep. 21, 1979, abandoned. This application Oct. 23, 1981, Ser. No. 314,217
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—493.5 3 Claims



1. Coffee filter system, comprising:

(a) a plurality of cup-like disposable filters, each filter having a generally circular bottom wall and a generally frusto-

conical side wall, said filters being arranged in a nested stack, and

(b) a continuous elongated tab element that is threaded sinuously from one side to another of the plurality of filters to form a tab associated with the innermost filter and which is accessible for grasping by the fingers of a user, so that, as the tab is pulled upwardly, the element lifts the filters one at a time from the remaining filters in the stack,

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4,362,624

PAINT STRAINER

Yoshiaki Ueda, 33-3, Numa-cho, Kishiwada-shi, Osaka-fu, Japan

Filed Jun. 30, 1981, Ser. No. 279,216
Claims priority, application Japan, Feb. 23, 1981, 56-25742[U]
Int. Cl.³ B01D 29/10
U.S. Cl. 210—497.2 6 Claims

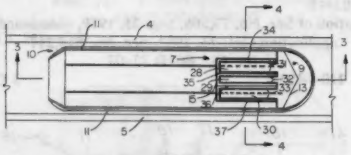
1. A strainer for paints or the like comprising a main body portion formed with at least one hole and having a first or lower filter means attached thereto so as to cover said hole and adapted to be folded into a funnel shape and a filter plate portion connected to said main body portion and formed with a notch and a second or upper filter means attached thereto so as to cover said notch and adapted to be folded into said main body already brought to a funnel shape so that some space will be left between said first filter means and said second filter means.

4,362,625

WASTE WATER CLARIFIER

Harold Beard, P.O. Box 3838, Baton Rouge, La. 70821

Filed Oct. 29, 1981, Ser. No. 316,112
Int. Cl.³ B01D 21/00
U.S. Cl. 210—521 7 Claims



1. A clarifier for removing solids from waste water in a waste water flow channel comprising,

(a) a forward section connected to a rear section by side walls, said forward section and side walls rising above said waste water, said rear section having an opening below the waste water level to allow said waste water to enter a cavity formed by the forward section, the rear section and the side walls,

(b) a bottom panel attached to said side walls below said waste water level, said bottom panel having rows of vertically inclined baffle plates separated by openings to allow said solids to flow from said cavity back to said channel; and,

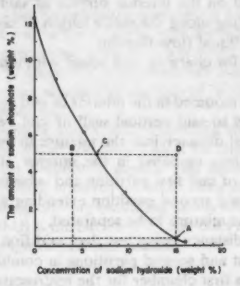
(c) an effluent launder attached to said side walls and positioned in said forward section, said launder comprising a trough having means to allow said waste water located in said cavity to enter said trough.

4,362,626

ION EXCHANGER OF HYDRATED OXIDE OF TI, ZR, OR SN AND CURED POLYESTER, AND EXCHANGE METHOD

Tatsuro Takeuchi, Oumihachiman; Masaki Sokukawa, Takatsuki, and Ryuzo Kimoto, Ibaraki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Aug. 12, 1980, Ser. No. 177,508
Claims priority, application Japan, Aug. 16, 1979, 54-104710; May 30, 1980, 55-72947
Int. Cl.³ B01J 39/18; C08J 5/24; C08K 3/22
U.S. Cl. 210—670 10 Claims



1. An adsorbent, which is prepared by subjecting to curing a mixture consisting of (a) one part by weight of at least one member selected from the group consisting of metal oxide hydrate represented by the general formula:

$$MO_2.nH_2O$$

wherein M is titanium, zirconium or tin and
n is a positive number of 0.5 to 2.0
and (b) about 1/10 to 3 parts by weight of unsaturated polyester resin in a vinyl showing resistance to acids and alkalis.

4,362,627

CELLULAR FLOW SYSTEM AND METHOD

Anderson B. Fly, and Charles B. Fly, both of 1406 N. Roosevelt, Amarillo, Tex. 79107

Filed Sep. 13, 1978, Ser. No. 941,782
Int. Cl.³ B01D 15/04
U.S. Cl. 210—676 10 Claims

1. The improved structure for contacting matter physically distinct from a fluid with said fluid comprising: a matter physically distinct from a fluid,

a. at least two adjacent vortices with diffusion boundaries therebetween, the vortices fluidly existing within and fluidly connected with a body of said fluid,

b. matter injection means for introducing said matter into at least one of said vortices, and

c. matter removal means for withdrawing said matter from at least one of said vortices,

d. at least two vortex cells,

e. each of said vortex cells having at least one of said vortices therein,

f. each of said vortex cells having

(i) a rotational center,

(ii) a direction of rotation,

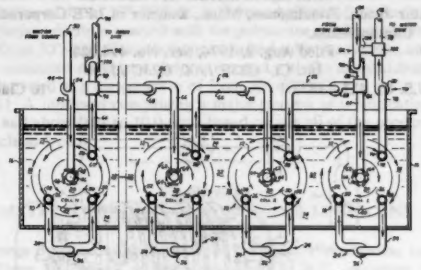
(iii) a perimeter distal of the center, and

g. each of said vortex cells being adjacent at least one other vortex cell,

h. fluid injection means including

(i) a fluid discharge point in a mechanism proximate the center of at least one of said vortex cells, and

(ii) injection pump means connecting the fluid discharge point with a source of additional fluid for pumping said



fluid from said source of additional fluid to said fluid discharge point, and

j. fluid removal means including

(i) a fluid removal point in a mechanism proximate the perimeter of at least one of said vortex cells, and

(ii) removal pump means connecting said fluid removal point with a sink of processed fluid for pumping said fluid from at least one of said vortex cells to said sink of processed fluid.

4,362,628

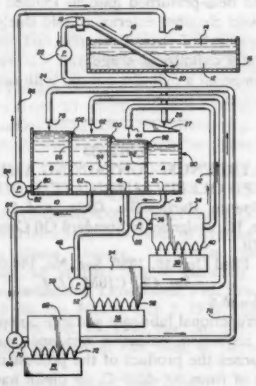
METHOD AND APPARATUS FOR CLEANING BASINS

Alvin B. Kennedy, Alvin, and Bertram M. Leecraft, Houston, both of Tex., assignors to Methods Engineering, Inc., Angleton, Tex.

Continuation-in-part of Ser. No. 171,362, Jul. 23, 1980, abandoned, which is a continuation-in-part of Ser. No. 36,345, May 7, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 240,418

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—712 **44 Claims**



1. A method for cleaning a cooling tower basin to remove particulate matter and debris from the water thereof, said method comprising:

transporting water and sediment from the bottom of said basin;

subjecting said water to primary solid separation to remove sand and debris and most of the silt and sludge therefrom;

transporting said primarily separated water to receiving vessel;

withdrawing water from the bottom of said receiving vessel;

subjecting said withdrawn water to secondary solid separation to remove substantially all of said silt and sludge therefrom;

transporting said secondarily separated water back to said cooling tower basin;

depositing water and sediment in a catch vessel;

withdrawing water and sediment from the lower portion of said catch vessel prior to said primary solid separation;

introducing flocculent material into said sediment-laden coolant water prior to primary solid separation;

separating any debris from said coolant water prior to said primary solid separation; and

further clarification of coolant water being returned to said cooling tower basin, said further clarification being accomplished by any one of a number of further clarification processes including settling, electrostatic precipitation and vacuum conveying.

4,362,629

METHOD FOR PROCESSING SOLUTION INCLUDING HEAVY METAL

Atsuo Senda, Ootsu; Tohru Kasanami, and Takuji Nakagawa, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 8, 1980, Ser. No. 194,981

Int. Cl.³ C02F *1/62*

U.S. Cl. 210—714 **10 Claims**

1. A method of processing a plating solution containing a reducing agent, and at least one copper or nickel heavy metal salt or complex, comprising the steps of

adding heavy metal powder to said solution and applying ultrasonic vibration to said solution.

10. A method of processing a plating solution containing a reducing agent, and a copper salt or complex, comprising the step of:

applying ultrasonic vibration to said solution.

4,362,630

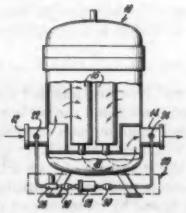
SIDE STREAM MONITORING

Dale A. Young, Basking Ridge, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 58,301, Jul. 17, 1979, abandoned, which is a continuation of Ser. No. 818,154, Jul. 22, 1977, abandoned. This application Jan. 12, 1981, Ser. No. 224,597

Int. Cl.³ B01D *35/14*

U.S. Cl. 210—745 **2 Claims**



1. A method of monitoring the performance of a clay filter in a main unit having an inlet and outlet for the passage of a main hydrocarbon fuel stream therethrough, comprising the steps of:

(a) providing a bypass line externally of said main unit between said inlet and said outlet;

(b) duplicating in said bypass line geometrical and dynamic

characteristics of said clay filter of said main unit by including in said bypass line a monitor device including reduced scale replica of said clay filter of said main unit which has at least proportionate flow velocity and residence time of said main stream through a predetermined section of said clay filter in main unit;

(c) passing substantially continuously a predetermined sample portion of said main hydrocarbon fuel stream through the replica clay filter in said monitor device when said main hydrocarbon fuel stream passes through said main unit;

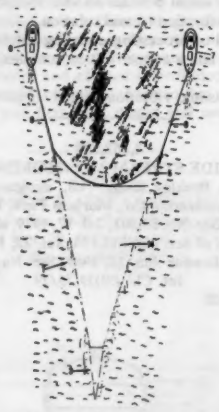
(d) removing said monitor device from said bypass line without disturbing operation of said main unit and passing a reference fuel containing a known amount of surfactant through said monitor device at a flow rate which is greater than the normal rated flow capacity of said clay filter; and

(e) collecting a sample amount of reference fuel which passes through said monitor device and measuring the water shedding ability of said reference fuel to determine the effectiveness of said monitor clay filter which is an indication of the continued effectiveness of the main stream clay filter.

4,362,631
SPECIAL TRAWL NET FOR COLLECTING FLOATING PRODUCTS

Christian Bocard, Orgeval, and Maurice Lemesre, Wervicq-Sud, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Societe Anonyme Cousin Freres, Wervicq-Sud, both of, France

Filed Mar. 20, 1981, Ser. No. 245,770
Claims priority, application France, Mar. 21, 1980, 80 06419
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—776 **14 Claims**

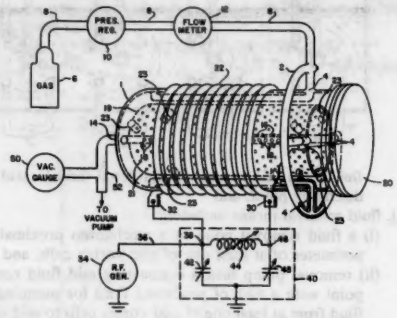


1. A special trawl type net, adapted for collecting floating products dispersed throughout the surface of a body of water, such as hydrocarbon agglomerates resulting from the action of natural elements on a hydrocarbon layer spread over the water surface, or from the treatment of such a layer by spreading a binding agent thereon, said net comprising a flattened pocket adapted for being towed by means of two wing sections held in spaced relationship from each other and connected to said pocket at the level of an inlet opening thereof, said pocket having a funnel-shaped leading portion with a flattened cross-section which progressively decreases from said inlet opening, said leading portion having a dorsal or upper face and a ventral or lower face, and connected to a trailing portion of the trawl net, said dorsal face and the rear portion of the trawl net having mesh openings of a size comprised between 2 and 10 millimeters, to define a close-mesh netting capable of permitting water to discharge therethrough and said close mesh netting also covering the upper part of said trawl net wing sections and overlaping the lower part of said wing sections and said ventral face, and wherein said close-mesh netting defines on said ventral face, two lateral strips separated by a central net zone of wider-mesh netting to facilitate water discharge therethrough.

4,362,632
GAS DISCHARGE APPARATUS

Adir Jacob, Framingham, Mass., assignor to LFE Corporation, Clinton, Mass.

Filed Aug. 2, 1974, Ser. No. 494,024
Int. Cl.³ C23F *1/00*; C23C *15/00*
U.S. Cl. 422—183.04 **10 Claims**



1. Apparatus for reacting a gas with a material comprising:
an evacuable reaction chamber adapted to receive and expel a gas,
means external of said chamber for forming a gaseous plasma within said chamber,
means for introducing material to be modified by reaction into said chamber and for removing modified material from said chamber, and
a metallic shielding structure having a multiplicity of openings therein disposed within said chamber adapted to provide a glow-free material-placement zone within the confines of said metallic structure containing neutral active species and substantially void of nonuniformly distributed and field-perturbed gaseous ionized species formed within said chamber external of said shielding structure.

4. The apparatus of claim 1 wherein said reaction chamber has a generally cylindrical shape and wherein said metallic structure comprises a cylinder coaxial with said chamber and having perforations therethrough.

4,362,633
MOLYBDENUM-CONTAINING AMINATED SULFURIZED OLEFIN LUBRICATING OIL ADDITIVES

J. Ronald Spence, Bartlesville, Okla., and C. Thomas West, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 10, 1980, Ser. No. 196,055
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—46.4 **11 Claims**

1. A multifunctional lubricant additive composition providing friction reduction, oxidation resistance and dispersancy, which comprises the product of the process of reacting at a temperature of from 50°–500° C. an olefin having 10–10,000 carbon atoms with about 0.1 to about 20 moles of sulfur or a sulfur-yielding compound per mole of the olefin to form a sulfurized olefin; reacting the sulfurized olefin at a temperature of from 50°–400° C. with 0.1 to 20.0 moles of a polyamine to form an aminated sulfurized olefin and reacting the aminated sulfurized olefin at a temperature of from 50°–300° C. with

about 0.1 to 10.0 moles of a molybdenum compound per mole of the olefin to form the additive composition.

3. A multifunctional lubricant additive composition providing friction reduction, oxidation resistance, and dispersancy, which comprises the reaction product of (a) an olefin having from 10 to 10,000 carbon atoms; (b) a polyamine having the formula $NH_2[(CH_2)_zNH]_xH$, wherein z is an integer from 2 to 12 and x is an integer from 1 to 10, and wherein z is from 2 to 6 when x is from 2 to 10; (c) sulfur or a sulfur-yielding compound and (d) a molybdenum compound; wherein the olefin is reacted with said sulfur or sulfur-yielding compound at a temperature of from 50°–500° C. to form a sulfurized olefin, the sulfurized olefin is reacted with the polyamine at a temperature of from 50°–400° C. to form an aminated sulfurized olefin, and the aminated sulfurized olefin is reacted with the molybdenum compound at a temperature of from 50°–300° C.

11. A lubricant comprising a major portion of a lubricating oil and about 0.01 to 10.0 wt% based on the oil of the product of claim 1 or 3.

4,362,634
METAL WORKING LUBRICANT AND LUBRICANT EMULSION

George Berens, Bardonia; Frank L. Padovani, Pleasantville, and Peter E. Timony, Valley Cottage, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 19, 1980, Ser. No. 131,620
Int. Cl.³ C10M *1/06, 1/10*
U.S. Cl. 252—49.5 **13 Claims**

1. A metal working lubricant comprising:

(a) about 60 to about 90 weight percent of a polyol ester derived from the esterification of aliphatic polyol with aliphatic carboxylic acid, wherein said aliphatic carboxylic acid is (i) an aliphatic monocarboxylic acid of 4 to 18 carbon atoms; or (ii) a mixture of an aliphatic monocarboxylic acid of 4 to 18 carbon atoms and an aliphatic dicarboxylic acid of 3 to 12 carbon atoms, with the proviso that the proportion of dicarboxylic acid in said mixture is such that on the average not more than one of the average number of hydroxyl groups in the polyol is esterified by said dicarboxylic acid;

(b) about 1 to about 10 weight percent of a triaryl phosphate represented by the formula:

wherein R_1, R_2, and R_3 may be the same or different radical selected from the group consisting of phenyl, cresyl, xylyl, toluyl, isopropylphenyl, tertiary butylphenyl, tertiary nonylphenyl and secondary butylphenyl; and

(c) about 5 to about 30 weight percent of a carboxylic ester nonionic surfactant selected from the group consisting of the anhydrosorbitol ester type and the glycerol ester type.

4,362,635
LACTONE-MODIFIED ESTER OILS

Rolf Dhein; Karl-Heinz Hentschel, both of Krefeld; Karl Nützel, Neulussheim; Klaus Morche, Mannheim, and Wolfgang Schüle, Ketsch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 80,279, Oct. 1, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,775
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843473
Int. Cl.³ C10M *1/26*
U.S. Cl. 252—56 S **8 Claims**

1. Esterification products of

(a) aliphatic C_1–C_{14} alcohols containing one or more alcoholic hydroxyl groups;

(b) aliphatic C_4–C_{18} mono- or di-carboxylic acids which may optionally be replaced by up to 55 mole percent of cycloaliphatic C_6–C_{12} carboxylic acids and up to 5 mole percent of aromatic C_7–C_{12} carboxylic acids, and

(c) 6 to 9-membered lactones of aliphatic C_5–C_{12} hydroxycarboxylic acids,

wherein:

the units derived from the lactones make up from 5 to 45% by weight of the esters;

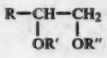
the ratio of carbon to oxygen atoms is greater than 4.1 and either monoalcohols (a) and dicarboxylic acids (b) or polyhydric alcohols (a) and monocarboxylic acids (b) are used for producing the ester oils.

4,362,636
CRANKCASE LUBRICANT AND METHOD FOR IMPROVING FUEL ECONOMY OF INTERNAL COMBUSTION ENGINES UTILIZING SAME

Vernon R. Small, Jr., Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

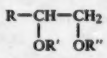
Filed Dec. 12, 1980, Ser. No. 215,954
Int. Cl.³ C10M *1/26*
U.S. Cl. 252—56 R **8 Claims**

1. In a lubricating oil formulated for use in the crankcase of an internal combustion engine, the improvement of including in said formulated oil about 0.10% to 5.0% by weight of at least one hydroxyalkyl alkanoate of the formula:



wherein R is alkyl containing from 4 to 28 carbon atoms, one of R′ and R″ is hydrogen and the other is alkanoyl containing 1 to 30 carbon atoms.

5. A method for reducing fuel consumption in an internal combustion engine by treating the moving surfaces thereof with a composition comprising a major amount of an oil of lubricating viscosity containing a fuel-reducing amount of at least one hydroxyalkyl alkanoate of the formula:



wherein R is alkyl containing from 4 to 28 carbon atoms, and one of R′ and R″ is hydrogen and the other is alkanoyl of 1 to 30 carbon atoms.

4,362,637
GRAIN BOUNDARY LAYER DIELECTRIC CERAMIC COMPOSITIONS

Yoshihiro Matsuo, Neyagawa; Gen Itakura, Hirakata; Shoichi Ikebe, Miyazaki, and Tatsuya Wada, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 1, 1981, Ser. No. 249,885
Claims priority, application Japan, Apr. 11, 1980, 55/48366
Int. Cl.³ H01B *3/12;* C04B *35/46*
U.S. Cl. 252—62.3 BT **3 Claims**

1. A grain boundary layer dielectric ceramic composition comprising semiconductive ceramic grains having a composition of 50.23 to 49.47 mol% of SrO, 49.72 to 50.23 mol% of TiO_2, and 0.05 to 0.3 mol% of Nb_2O_5, substantially each of said grains being surrounded by a grain boundary layer of dielectric material formed by grain boundary diffusion of a mixture consisting of 93.5 to 8.5 mol% of Bi_2O_3, 4.5 to 45 mol% of Cu_2O, 0.5 to 4 mol% of MnO_2, 1 to 8.5 mol% of B_2O_3, 0.5 to 17 mol% of La_2O_3, and less than 17 mol% of TiO_2, characterized in having a temperature coefficient of capacitance lower than said composition recited above absent La_2O_3 in said grain boundary diffusion mixture.

4,362,638

GELLED LAUNDRY PRE-SPOTTER

Michele M. Caskey, and John A. Sramek, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 172,613, Jul. 28, 1980, abandoned. This application Sep. 4, 1981, Ser. No. 299,457

Int. Cl.³ C11D *1/70, 1/825, 3/44, 17/00*

U.S. Cl. 252—90 3 Claims

1. A laundry pre-spotting composition comprising from about 13–17% by weight of an ethoxylated nonyl phenol having 8 moles of ethylene oxide; from about 13–17% by weight of an ethoxylated nonyl phenol having 6 moles of ethylene oxide; from about 22–28% by weight of an isoparaffinic hydrocarbon solvent having a boiling range of 97°–206° C.; from about 8–12% by weight of d-Limonene; from about 4–6% by weight of n-butoxy propanol; and from about 25–35% by weight of water.

2. The composition of claim 1 wherein the composition is pressurized in an aerosol container utilizing from 5–20% by weight of a hydrocarbon propellent selected from the group consisting of propane, isobutane and butane and mixtures thereof.

4,362,639

CLEANSER WITH IMPROVED AFTERODOR AND TARNISH RESISTANCE

Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 251,030, Apr. 3, 1981. This application Aug. 31, 1981, Ser. No. 297,892

Int. Cl.³ C11D *3/395, 7/10, 7/18, 17/00*

U.S. Cl. 252—99 57 Claims

1. A cleansing composition comprising:

(a) an oxidizing agent containing a monopersulfate salt in an amount of from 35% to 60% by weight;

(b) a bleaching promoter selected from alkali metal and alkaline earth metal halides, in an amount up to about 20% by weight;

(c) a perborate salt present in amounts sufficient to inhibit tarnish and corrosion of metal; and

(d) a compound providing ammonium ion in an amount effective to inhibit evolution from said cleansing composition of chlorine-like odor and taste.

10. The composition of either claims 1 or 9, wherein said compound providing ammonium ion is selected from ammonium chloride, ammonium sulfate, ammonium citrate, ammonium phosphate and mixtures thereof.

4,362,640

METHOD FOR RETARDING GELATION OF CRUTCHER SLURRIES CONTAINING BICARBONATE, CARBONATE AND SILICATE

Ronald S. Schreiber, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 81,799, Oct. 4, 1979, Pat. No. 4,298,493. This application Sep. 16, 1981, Ser. No. 302,528

Int. Cl.³ C11D *7/12, 7/14, 11/02, 17/06*

U.S. Cl. 252—135 12 Claims

1. A method of retarding or preventing the gelation of a miscible and pumpable crutcher slurry containing from 40 to 70% of solids and 60 to 30% of water, of which solids content, on a 100% solids basis, 40 to 80% is sodium bicarbonate, 5 to 40% is sodium carbonate and 5 to 25% is sodium silicate of $Na_2O:SiO_2$ ratio within the range of 1:1.6 to 1:3, with the ratio of sodium bicarbonate:sodium carbonate being within the range of 2:1 to 8:1 and the ratio of sodium carbonate:sodium silicate being within the range of 1:3 to 3:1, which comprises preparing an aqueous crutcher slurry of the sodium bicarbonate and sodium carbonate, and admixing with such aqueous slurry carbon dioxide and an aqueous solution of the sodium silicate, said carbon dioxide being added in an amount sufficient to prevent said gelation of the slurry.

12. A method of making a particulate base material in bead form, suitable for absorbing nonionic detergent to make a built heavy duty synthetic organic detergent composition, which comprises making a miscible and pumpable crutcher slurry containing from 40 to 70% of solids and 60 to 30% of water, of which solids content, on a 100% solids basis, 40 to 80% is sodium bicarbonate, 5 to 40% is sodium carbonate and 5 to 25% is sodium silicate of $Na_2O:SiO_2$ ratio within the range of 1:1.6 to 1:3, with the ratio of sodium bicarbonate:sodium carbonate being within the range of 2:1 to 8:1 and the ratio of sodium carbonate:sodium silicate being within the range of 1:3 to 3:1, by preparing in a crutcher a slurry of the sodium bicarbonate and sodium carbonate in water, admixing with such slurry an aqueous solution of the sodium silicate and admixing carbon dioxide with the slurry during the admixing of the sodium silicate solution, so as to maintain the pH of the slurry within the range of 9.7 to 10.1 during the addition of the sodium silicate solution and thereby prevent gelation of said slurry, pumping the slurry out of the crutcher in ungelled and readily pumpable state and spray drying the slurry to particulate bead form, during which spray drying a portion of the sodium bicarbonate is converted to sodium carbonate.

4,362,641

COMPOSITION OF AN STPP PRODUCT FOR DISHWASHER DETERGENT FORMULATIONS AND METHOD OF PREPARATION

John A. Peterson, Niagara Falls, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 129,761, Mar. 12, 1980, abandoned. This application Sep. 16, 1981, Ser. No. 302,934

Int. Cl.³ C11D *3/06, 7/16, 11/00, 17/06*

U.S. Cl. 252—135 4 Claims

1. A process for preparing a STPP composition having an apparent density of 0.7 gm/cm³ to 0.9 gm/cm³, comprising blending equal parts by weight of

a. a granular anhydrous STPP having a maximum of 25% Phase I, at least 80% being −50 mesh, with

b. a granular anhydrous STPP having a minimum of 45% Phase I, at least 80% being +50 mesh, to obtain a STPP composition which contains about 30% to about 40% Phase I STPP with not more than 5% of the +50 mesh STPP being less than 25% STPP Phase I, with less than 10% being +20 mesh and less than 10% being −100 mesh.

4,362,642

ALKYL PHOSPHORIC ACID POLYVALENT SALTS-MINERAL OIL LATHER CONTROLLED DETERGENT COMPOSITIONS

Malcolm N. A. Carter, Bromborough, England, and Peter R. Garrett, Northop, Nr. Mold, Wales, assignors to Lever Brothers Company, New York, N.Y.

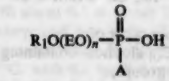
Continuation of Ser. No. 757,165, Jan. 6, 1977, abandoned, which is a continuation of Ser. No. 55,714, Jul. 9, 1979, abandoned, which is a continuation of Ser. No. 162,987, Jun. 25, 1980, abandoned. This application Jul. 7, 1981, Ser. No. 280,973

Claims priority, application United Kingdom, Jan. 23, 1976, 2670/76

Int. Cl.³ C11D *3/36, 11/00*

U.S. Cl. 252—174.16 18 Claims

1. A solid detergent composition for fabric washing in water comprising about 1% to about 90% by weight of an anionic, nonionic, amphoteric or zwitterionic detergent active compound and about 0.05% to about 20% by weight of a polyvalent salt of an alkyl phosphoric acid having the general formula:



where A is —OH or R_2O, n is 0 and R_1 and R_2 are the same or different C_{16-22} straight or branched chain, saturated or unsaturated alkyl groups, and containing about 0.05% to about 20% by weight of a mineral oil.

4,362,643

AQUEOUS BASIC POLYALUMINUM-IRON HALIDE SOLUTIONS

Vincent H. S. Kuo, Liverpool, and Christian A. Wamser, Camillus, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 55,416, Jul. 6, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,984

Int. Cl.³ C02F *1/20*

U.S. Cl. 252—175 **6 Claims**

1. An aqueous basic polyaluminum iron halide solution, useful for turbidity reduction in waste water treatment consisting essentially of a composition of the formula

$$Al_{1-x}Fe_x^{III}Fe_y^{II}(OH)_{3+2y-z}Hal_z$$

wherein Hal is chlorine, bromine, iodine or mixtures thereof; $x+y/1-x$ is about 0.2 to 1.5; $3+2y-z/3+2y$ is about 0.24 to 0.67; and z is less than $3+2y$; x/y is about 0 to 1; and wherein the concentration of the metal ions is from about 1.35 to 4.5 moles/liter.

4,362,644

ARYLALKYL SILICONE SULFONATE-SILICATE COPOLYMERS

Pauls Davis, Gibraltar, and Joe C. Wilson, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

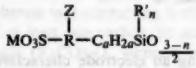
Filed Apr. 1, 1981, Ser. No. 250,087

Int. Cl.³ C07F *7/08*

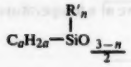
U.S. Cl. 252—389 R **13 Claims**

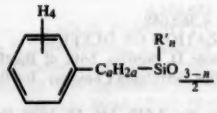
1. A copolymer consisting essentially of from 0.1 to 99.9 parts by weight of at least one

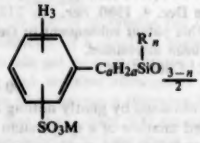
group member selected from the group consisting of at least one silicone sulfonate group member derived from silicone sulfonates having the formula:



wherein Z is selected from the group consisting of at least one of an hydrogen atom, an alkyl group, an aryl group and a group having any of the formulas:

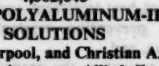






wherein each of the groups represented by the above formulas are monovalent groups connected to R through a carbon to carbon linkage, R is a divalent or trivalent aryl group containing up to and including 10 carbon atoms, R' is an alkyl group, a is an integer of from 2 to 4, n is an integer of from 0 to 2, and M is a monovalent, divalent, or trivalent cation; and

from 0.1 to 99.9 parts by weight of at least one silicate group member represented by the formula:



wherein X is a cation that forms a water-soluble silicate; d is the valence of the cation represented by X and has a value of at least one; and e has a value from 1 to 3 inclusive; said parts by weight of said groups in said copolymer being based upon 100 parts by weight of said copolymer.

4,362,645

TEMPERATURE INDICATING COMPOSITIONS OF MATTER

Craig R. Hof, Hopatcong, and Roy A. Ulin, Wyckoff, both of N.J., assignors to Akzona, Inc., Asheville, N.C.

Continuation of Ser. No. 946,935, Sep. 28, 1978, Pat. No. 4,232,552, which is a continuation-in-part of Ser. No. 895,422, Apr. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 844,334, Oct. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 796,492, May 12, 1977, abandoned. This application Nov. 10, 1980, Ser. No. 205,079

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ G01K *11/06, 11/08, 11/12, 11/16*; C09K *3/00*

U.S. Cl. 252—408.1 **140 Claims**

1. A composition of matter exhibiting a sharp color change upon transition from a liquid state to a solid state or from a solid state to a liquid state, capable of being supercooled for at least several minutes, and substantially free of impurities, to form a solid solution when the composition is in a solid state, consisting essentially of:

(a) a solvent adapted to change from a solid state at substantially a predetermined temperature to a liquid state; and

(b) an effective amount of an indicator material selected from the group consisting of pinacyanol iodide, thionin, methylene blue, cresol red, neutral red iodide, neutral red chloride, crystal violet, acridin orange, Orasol Orange RLN ™, Orasol Navy Blue ™, Irgalith Red PR ™, Fat Red BS ™, Xylene Cyanol FF ™, Rhodamine B ™, Rhodamine 6G ™, Irgalith Magenta TCB ™, Irgalith Pink TYNC ™, Toluidene Blue O ™, Savinyl Green B ™, Savinyl Blue RS ™, purpurin, 3,3'-diethylthiadicarbocyanine iodide, cryptocyanine, Dicyanine A ™, Merocyanine 540 ™, 4-(p-ethoxyphenylazo)-m-phenylene diamine hydrochloride, Yellow Orange S ™, Chrysoidan G ™, fuchsin, aurintricarboxylic acid (ammonium salt), Victoria Blue R ™, Pyronin G ™, gallein, Erythrosin Yellow Blend ™, chlorophenol blue, bromophenol blue, bromocresol purple, Coriphosphine O ™, acriflavine, acridine orange, rhoduline violet, Alizarin Cyanine 2R ™, Alizarin Red S ™, alcannin, Aurantia, Direct Green G ™, Fast Salt Red 3GL ™, Fast Salt Blue BB ™, Fast Garnet Salt GBC ™, Carta Yellow G 180 0/0 ™, murexide, Savinyl Blue GLS ™, Irgalith Blue GLSM ™, phthalocyanine, Di Amingreen B ™, Alizarin Blue S ™, Celliton Blue Extra ™, neocyanine, Janus Green ™, dimethyl yellow, Fast Yellow ™, methyl red sodium salt, Alizarin Yellow R ™, Eriochrome Black T ™, Chromotrope 2R ™, Ponceau 6R ™, Brilliant Ponceau G/R/2R ™, chromolan yellow, Sudan Red B ™, Bismark brown G ™, Fat Black ™, Resorcin Brown ™, Benzofast Pink 2BL ™, Oil Red EGN ™, Euroglaucine, Fuchsin NB ™, parafuchsin, Patent Blue ™, Irgalith Blue TNC ™, Phloxin B ™, fluorescein sodium salt, Rhodamine B base ™, Eosin Scarlet, Eosin Yellowish, Erythrosin extra bluish,

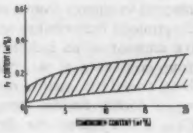
4,5-dibromofluorescein, ethyleosin, Phloxin TM, Cyanovin B TM, chlorocresol green, pinacyanol bromide, 2-(p-dimethylaminostyryl)-1-ethylpyridinium iodide, ethyl red, nigrosine, Savinyl Blue B TM, Orasol Blue BLN TM, Safranin O TM, Azocarnum G TM, Phenosafranine TM, Azocarmine BX TM, Solophenyl Brilliant Blue BL TM, Nile Blue A TM, gallocyanine, gallamine blue, celestine blue, methylene green Azure A/B/C TM, Blue VIF Organol TM, Alizarin, Nitrofast Green GSB TM, quinalizarine, Oil Blue N TM, Solvay purple, Ciba Blue TM, Indigo Synthetic TM, Chromophthal Bordeau RS TM, Acid Alizarin Red B TM, 5-amino-fluorescein, Rose Bengal TM, Martius Yellow TM, Chicago Blue 6B TM, Alcian Blue 8GX TM, cresyl violet, 4,4-bis(dimethylamino)-benzylhydrolzinc phthalocyanine, Sudan III TM, Pyronin Y TM, Toluylene Blue TM, cresyl violet perchlorate, Mendola's Blue TM, Phosphine Dye, Nitron TM, cresyl violet acetate, Ceres Orange R TM, 4-phenylazo-1-naphthyl-amine, 4-(4-dimethylamino-1-naphthylazo)-3-methoxybenzene sulfonic acid, Bindschedler's Green TM, and p-(p-dimethylaminophenylazo)-benzoic acid dissolved in and inert towards said solvent and adapted to change color of the composition visible to the naked eye upon the change in state at substantially the predetermined temperature when so dissolved.

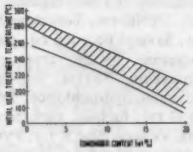
4,362,646

PROCESS FOR THE PRODUCTION OF FIBROUS ACTIVATED CARBON

Shigeru Ikegami, Mishima; Minoru Hirai, and Kazuo Izumi, both of Shizuoka, all of Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,616
Claims priority, application Japan, Sep. 28, 1979, 54-124891
Int. Cl.³ C01B *31/10;* B01J *20/20;* D01F *9/22, 9/12*
U.S. Cl. 252—422 **17 Claims**





1. A process for producing a fibrous activated carbon which comprises

(1) spinning a dope of a polyacrylonitrile or a copolymer thereof comprising at least about 60 wt% acrylonitrile to thereby obtain an acrylonitrile-based fiber having a diameter of from 1.5 to 15 denier,

(2) treating the acrylonitrile-based fiber with a solution of an iron compound to thereby obtain an acrylonitrile-based fiber containing the iron compound in the range satisfying the equation (1)

$$0.02\sqrt{X} + 0.02 \leq y \leq 0.05\sqrt{X} + 0.10 \quad (1)$$

wherein X is the wt% content of comonomer in the acrylonitrile-based fiber and y is the wt% iron content,

(3) preoxidizing the acrylonitrile-based fiber containing the iron compound at an initial heat-treatment temperature satisfying the equation (2)

$$280 - 5X \leq Z \leq 290 - 4X$$

wherein X has the same meaning as in equation (1) and Z is the initial heat-treatment temperature (°C.), the iron compound preventing substantial coalescence during preoxidizing, and

(4) then gas activating the preoxidized acrylonitrile-based fiber.

12. A process as in claim **1**, wherein said acrylonitrile-based fiber is preoxidized until the equilibrium water content of said fiber reaches from 8 to 13%.

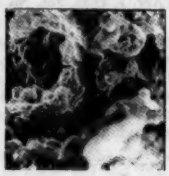
16. A process as in claim **1**, wherein after preoxidation at said initial heat-treatment temperature the fiber is preoxidized at a higher temperature which is less than about 400° C.

4,362,647

ELECTRODE AND THE METHOD FOR PRODUCING THE SAME

Eiichi Torigai, Yao; Noboru Wakabayashi, Ikeda; Yoji Kawami, Kawachinagano; Eiji Kamijo, Takatsuki; Tatsuya Nishimoto, Kawanishi, and Katsuhito Tani, Toyonaka, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo and Sumitomo Electric Industries, Osaka, both of, Japan

Filed May 28, 1981, Ser. No. 267,854
Claims priority, application Japan, Jun. 5, 1980, 55-77038
Int. Cl.³ C25B *11/04;* H01M *4/32, 4/02*
U.S. Cl. 252—425.3 **5 Claims**



1. A method for producing an electrode characterized in that electrode material consisting of nickel or nickel alloy or electrode material of multiple layers comprising said electrode material coated with nickel or nickel alloy powder is subjected to oxidization treatment in a high temperature oxidizing atmosphere, said electrode material being then subjected to reduction treatment in a reducing atmosphere at a temperature lower than said oxidization temperature.

4,362,648

POLYMERIZATION OF OLEFINS

Richard E. Dietz, and Oscar D. Nowlin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 3,439, Jan. 15, 1979, Pat. No. 4,240,929. This application Dec. 4, 1980, Ser. No. 212,968
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **30 Claims**

1. A catalyst composition obtained by gently milling a magnesium alkoxide with a milled mixture of a magnesium halide compound and a titanium tetrahalide said gently milling being characterized by up to about 300 shaking, rocking or rotating movements per minute of a receptacle containing grinding elements, said magnesium alkoxide and said milled mixture.

4,362,649

CATALYST COMPOSITION FOR BODY TEMPERATURE OF LIQUID POLYTHIOPOLYMERCAPTAN POLYMERS FOR MAKING ELASTOMERIC DENTAL IMPRESSIONS

Melvin L. Larson, Ann Arbor, Mich., assignor to Sybron Corporation, Rochester, N.Y.

Filed Mar. 25, 1981, Ser. No. 247,231
Int. Cl.³ B01J 31/02, 31/26
U.S. Cl. 252—430 5 Claims

1. A catalyst composition in the form of a paste suitable for body temperature cure of liquid polythiopolymercaptan polymers which comprises in weight percent about 40 to 60 percent organic acid-treated, submicron zinc oxide, about 5 to 20 percent benzothiazyl disulfide having a purity of at least 92 percent by weight, and where the ratio of zinc oxide to benzothiazyl disulfide is at least about 2 to 1, and about 20 to 50 percent plasticizer.

4,362,650

CATALYST AND PROCESS FOR OLEFIN OLIGOMERIZATION

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Gerard Leger, Saint Genis les Ollieres; Jean Gaillard, Lyons, and Nhu H. Phung, Antony, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 8, 1981, Ser. No. 261,819
Claims priority, application France, May 8, 1980, 80 10359
Int. Cl.³ B01J 31/04, 31/14
U.S. Cl. 252—431 C 13 Claims

1. In a catalyst composition obtained by contacting, in any order, at least one bivalent nickel compound with at least one hydrocarbylaluminum halide and at least one Bronsted organic acid whose pKa at 20° C. is at most equal to 3,

the improvement wherein said hydrocarbylaluminum halide has 1.5–2 halogen atoms per atom of aluminum; and wherein said contacting is effected in the further presence of at least one carboxylic acid anhydride having the formula $(R_3CO)_2O$, wherein each R_3 is independently an unsubstituted or halogen-substituted C_{1-20} hydrocarbyl group.

4,362,651

HIGH POROSITY CATALYSTS

Eugene F. Schwarzenbek, 3 Seacrest Dr., Lavallette, N.J. 08735

Continuation-in-part of Ser. No. 22,853, Mar. 22, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,437
Int. Cl.³ B01J 27/02, 35/06, 29/02, 21/04
U.S. Cl. 252—440 13 Claims

1. A method of increasing the BET micro pore volume and pore diameter of a catalytic material prepared from an inorganic oxide gel by incorporating into the catalyst mix, before drying and without subsequent removal, a calcium sulfate whisker fiber having a diameter less than about 5 microns, a length less than about 100 microns, and having a length to diameter ratio of at least about 3.

2. Method of claim 1 in which the amount of whisker fiber in the final catalyst is between 5 and 50%.

3. Method of claim 1 in which the whisker fiber is calcium sulfate anhydrite.

4,362,652

CRACKING CATALYSTS CONTAINING SILICA-ALUMINA GELS

Dennis Stamires, Newport Beach, and Hamid Alafandi, Woodland Hills, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 81,655, Oct. 4, 1979, Pat. No. 4,310,441, which is a continuation-in-part of Ser. No. 3,879, Jan. 16, 1979, Pat. No. 4,238,360, which is a continuation-in-part of Ser. No. 935,628, Aug. 21, 1978, Pat. No. 4,239,651, which is a continuation-in-part of Ser. No. 874,755, Feb. 3, 1978, Pat. No. 4,198,319, which is a continuation-in-part of Ser. No. 769,118, Feb. 16, 1977, Pat. No. 4,142,995. This application Jul. 8, 1981, Ser. No. 281,403
Int. Cl.³ B01J 21/12, 23/10, 37/02
U.S. Cl. 252—453 5 Claims

1. A method of producing silica-alumina catalyst which comprises mixing in a reaction mixture sodium silicate with a combination of anionic and cationic aluminum salts in such amounts as to provide an SiO_2/Al_2O_3 mole ratio in the mixture in the range of about 1 to 3 moles of SiO_2 per mole of Al_2O_3 based on the total Al_2O_3 content of the combination of anionic and cationic aluminum salts; of the total quantity of Al_2O_3 provided by the combination of aluminum salts, less than 95% by weight and more than 50% by weight is selected from anionic aluminum salts, the balance from cationic aluminum salts; adding ammonium hydroxide to the said mixture and adjusting the pH in the mixture to a range of about 9 to about 10, thereby forming an ammoniated silica-alumina gel, separating said gel and mixing said gel with a water solution of a polyvalent or a monovalent cation other than alkali metal cation, subjecting said solution to hydrothermal treatment at superatmospheric pressure and reducing the NH_4 content associated with said ammoniated gel to substantially less than 0.3 equivalents of NH_4 per mole of Al_2O_3, separating and drying said gel.

5. The process of claim 1, wherein the water solution of the polyvalent cation is an aqueous rare earth metal solution.

4,362,653

HYDROCARBON CONVERSION CATALYST

Delmar W. Robinson, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 27, 1981, Ser. No. 257,690
Int. Cl.³ B01J 21/12
U.S. Cl. 252—455 R 2 Claims

1. A catalyst composite comprising from about 5 weight percent to about 95 weight percent of a silica polymorph consisting of crystalline silica, said silica polymorph after calcination in air at 600° C. for one hour, having a mean refractive index of 1.39±0.01 and a specific gravity at 25° C. of 1.70±0.05 g/cc and at least 5 weight percent to about 95 weight percent Ziegler alumina.

2. The catalytic composite of claim 1 which comprises a component selected from Group IV-A, V-B, V-A, VI-B, VII-A, VII-B and VIII.

4,362,654

CHROMIUM-CONTAINING CATALYSTS FOR POLYMERIZING OLEFINS

Fred L. Vance, Jr.; Rafael E. Guerra, and Christopher P. Christenson, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 14, 1981, Ser. No. 263,642
Int. Cl.³ B01J 21/06, 23/22, 23/26, 23/86
U.S. Cl. 252—469 6 Claims

1. In an inorganic oxide supported chromium-containing catalyst wherein said catalyst has been prepared by contacting said inorganic oxide support with zero valent chromium in the vapor state followed by activation in an oxidizing atmosphere at an elevated temperature for a time sufficient to activate the catalyst.

4,362,655

CATALYST OR CATALYST SUBSTRATE

John W. Jenkins, Chalkhouse Green near Reading, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Dec. 10, 1980, Ser. No. 214,983
Claims priority, application United Kingdom, Dec. 18, 1979, 7943484
Int. Cl.³ B01J 23/40, 23/50, 23/52, 23/72
U.S. Cl. 252—474 14 Claims

1. A catalyst or catalyst substrate comprising at least one metal and/or alloy body wherein said body comprises silver or an alloy containing silver and is made by a melt spun or melt extraction process, said body being in the form of an elongate element.

4,362,656

THICK FILM RESISTOR COMPOSITIONS

Jacob Hormadaly, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 24, 1981, Ser. No. 286,558
Int. Cl.³ H01B 1/06
U.S. Cl. 252—518 11 Claims

1. A resistor composition consisting essentially of an admixture of finely divided particles of (a) 4–75% wt. ruthenium oxide-based conductive materials; (b) 96–25% wt. nonconductive glass; and (c) 0.05–15% wt. of a manganese vanadate compound corresponding to the formula:

$$Mn_{n-x}M_xV_{2-y}M'_yO_{5+n+\Delta},$$

wherein M is a metal cation having an ionic radius of 0.4 to 0.8;
M' is a metal cation having a valence of 4 to 6;
n is 1 to 2
x is 0 to 0.5;
y is 0 to 0.5; and
Δ is varied to achieve electrical neutrality, the admixture being dispersed in an organic medium.

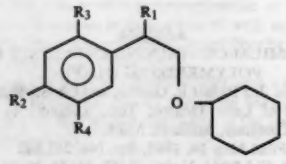
4,362,657

USE OF CYCLOHEXYL PHENETHYLETHER DERIVATIVE IN AUGMENTING OR ENHANCING THE AROMAS OF PERFUMES AND COLOGNES

Jacob Kiwala, Brooklyn, N.Y.; Richard J. Tokarzewski, Keyport, N.J.; Frederick L. Schmitt, Holmdel, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 235,844, Feb. 19, 1981, Pat. No. 4,324,923, which is a continuation-in-part of Ser. No. 192,238, Sep. 30, 1980, Pat. No. 4,306,096. This application Sep. 25, 1981, Ser. No. 305,538
Int. Cl.³ A61K 7/46
U.S. Cl. 252—522 R 2 Claims

1. A perfume composition comprising an aroma augmenting quantity of at least one cyclohexyl phenethylether derivative defined according to the structure:



wherein R_1, R_2, R_3 and R_4 are the same or different and each represents methyl or hydrogen with the proviso that one of R_2, R_3 and R_4 is methyl and the other two of R_2, R_3 and R_4 are hydrogen and intimately admixed therewith at least one adjuvant compatible with said cyclohexyl phenethylether derivative from an organoleptic standpoint which is selected from the group consisting of alcohols, aldehydes, ketones, nitriles, ethers other than said cyclohexyl phenethylether derivative, lactones, natural essential oils, synthetic essential oils and hydrocarbons.

4,362,658

PROCESS FOR PREPARING A FLAME RETARDANT COMPOSITION FROM SODIUM ANTIMONATE AND COMPOSITION THEREBY PRODUCED

Fulvio Contin, Wilrijk, Belgium, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Sep. 4, 1980, Ser. No. 184,009
Claims priority, application Luxembourg, Sep. 5, 1979, 81649
Int. Cl.³ C09K 3/28; C08F 6/00
U.S. Cl. 252—609 7 Claims

1. A process for preparing a flame retardant composition from sodium antimonate, comprising

(a) contacting sodium antimonate, resulting from the alkaline refining of molten antimony-bearing lead, with such an amount of a 1–5 N aqueous solution of at least one acid selected from the group consisting of hydrochloric, sulfuric, and nitric acid that the amount of acid ranges from 1 to 1.35 times the stoichiometric amount, between the freezing point and the boiling point of the acid solution and for at least 1 hour so as to dissolve at least 60% of the sodium contained in the antimonate, thereby leaving most of the antimony contained in the antimonate in a solid phase;

(b) separating the solid phase from the solution; and

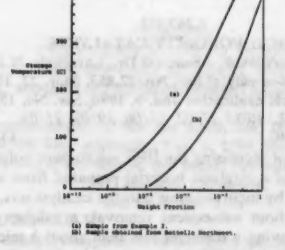
(c) drying and pulverizing the solid phase.

4,362,659

FIXATION OF RADIOACTIVE MATERIALS IN A GLASS MATRIX

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034; Joseph H. Simmons, Potomac, Md., and Theodore A. Litovitz, 904 Devere Dr., Silver Spring, Md. 20903, assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Silver Spring, both of, Md.

Continuation of Ser. No. 884,371, Mar. 9, 1978, Pat. No. 4,224,177, and a continuation-in-part of Ser. No. 836,778, Sep. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 784,437, Apr. 4, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,444
Int. Cl.³ G21F 9/02
U.S. Cl. 252—629 12 Claims



1. A glass composition containing radioactive gas dissolved, encapsulated and immobilized in the glass matrix, said composition being characterized by: (a) containing at least 75 mol percent SiO_2, (b) having high chemical durability to aqueous solution, and (c) containing radioactive gas selected from the

group consisting of krypton, iodine, bromine, xenon, radon, and mixtures thereof dissolved and fixed in the silica structure of said glass composition whereby leakage of said radioactive gas to the environment at environmental temperature is prevented for extremely long periods of time.

4,362,660

MERCURIC IODATE PRECIPITATION FROM RADIOIODINE-CONTAINING OFF-GAS SCRUBBER SOLUTION

Jerry A. Partridge, and Gail P. Bosuego, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 14, 1980, Ser. No. 168,979
Int. Cl.³ G21F *9/04, 9/02*
U.S. Cl. 252—631 **4 Claims**

1. A process for reducing the volume of a radioiodine containing mercuric nitrate-nitric acid off-gas scrubber solution comprising:

(a) first placing 15 to 16 molar nitric acid in a vessel;

(b) heating said nitric acid to boiling temperature; and then continuously and simultaneously

(c) introducing said scrubber solution into said vessel and mixing with nitric acid; and

(d) further heating the resultant mixture effecting evaporation of said mixture, oxidation by said nitric acid of said iodine to non-volatile iodate, and precipitation of said iodate as insoluble mercuric iodate;

wherein said introduction of said scrubber solution and said evaporation occur at rates continuously maintaining said mixture at a nitric acid concentration of about 15 to 16 molar.

4,362,661

IMMUNOGLOBULIN COMPOSITION HAVING A HIGH MONOMER CONTENT, AND PROCESS FOR PRODUCTION THEREOF

Syoji Ono, Kodaira; Yuji Fukumoto, Kumamoto, and Tsunemasa Yoshida, Hachioji, all of Japan, assignors to Teijin Limited, Osaka and The Chemo-Sero-Therapeutic Research Institute, Kumamoto, both of, Japan

Filed Aug. 6, 1980, Ser. No. 175,739
Claims priority, application Japan, Aug. 9, 1979, 54-100757; Aug. 9, 1979, 54-100758
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 B **3 Claims**

1. A method for producing a native immunoglobulin composition having a high monomer content, which comprises contacting a native immunoglobulin in aqueous solution with about 10 to about 600% by weight, based on the weight of the native immunoglobulin, of a water-soluble acid addition salt of a basic amino acid having a pKb at 25° C. of not more than 7 at a temperature between about 0° and about 50° C. in the absence of freezing and at a pH between about 5 and about 8, thereby to prevent aggregation of the monomer of the native immunoglobulin in the aqueous solution, and when the native immunoglobulin contains aggregated molecules, dissociating the aggregated molecules in the aqueous solution into monomers.

4,362,662

HETEROFULVALENE GEMINAL DITHIOLATE COMPOUNDS AND THEIR SELENIUM AND TELLURIUM ANALOGS AND A METHOD OF FABRICATING THE SAME

Edward M. Engler, Wappingers Falls; Vishnubhai V. Patel, Yorktown Heights, both of N.Y., and Robert R. Schumaker, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 38,050, May 10, 1979, Pat. No. 4,312,991. This application Aug. 17, 1981, Ser. No. 293,565
Int. Cl.³ C07D *421/04*
U.S. Cl. 260—239 R **1 Claim**

1. A new composition of matter diselenomethyl-(4,5-dicyano-1,3-diselenoliden-2-yl)-methylene.

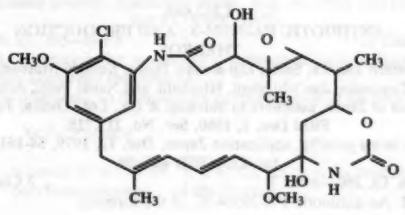
4,362,663

MAYTANSINOID COMPOUND

Makoto Kida, Kawanishi; Motowo Izawa, Amagasaki, and Kazuo Nakahama, Muko, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 17, 1980, Ser. No. 188,239
Claims priority, application Japan, Sep. 21, 1979, 54-122217
Int. Cl.³ C07D *498/18*
U.S. Cl. 260—239.3 P **1 Claim**

1. A compound of the formula:



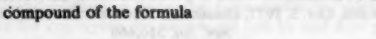
4,362,664

VINBLASTINE OXAZOLIDINEDIONE DISULFIDES AND RELATED COMPOUNDS

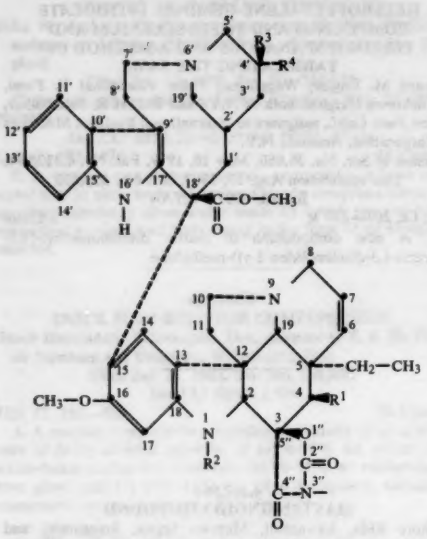
Koert Gerzon, and Jean C. Miller, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 29, 1980, Ser. No. 220,472
Int. Cl.³ C07D *519/04*; A61K *31/475*
U.S. Cl. 260—244.4 **6 Claims**

1. A compound of the formula



wherein Q is a 3''-oxazolidindionyl radical of the formula:



III

wherein

R^2 is CHO or CH_3; one of R^3 and R^4 OH or H and the other is ethyl; and

Z is Q, NCO or NH—CO_2—(C_1–C_3)alkyl.

4,362,665

ANTIBIOTIC PA-39504-X_1 AND PRODUCTION THEREOF

Kentaro Tanaka, Suita; Eiji Kondo, Ikeda; Kouichi Matsumoto, Toyonaka; Jun'ichi Shoji, Hirakata, and Naoki Tsuji, Ashiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

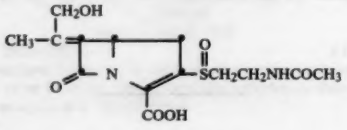
Filed Dec. 1, 1980, Ser. No. 211,715

Claims priority, application Japan, Dec. 12, 1979, 54-161170

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.2 T **2 Claims**

1. An antibiotic PA-39504-X_1 of the formula:



or a pharmaceutically acceptable salt thereof.

4,362,666

DIAZEPINOPYRROLOBENZODIAZEPINES

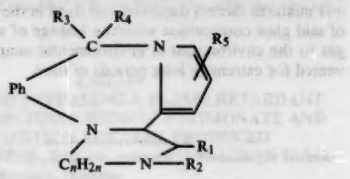
Jan W. F. Wasley, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 68,827, Aug. 22, 1979, Pat. No. 4,316,900, which is a continuation-in-part of Ser. No. 933,358, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 839,696, Oct. 5, 1977, abandoned. This application Oct. 13, 1981, Ser. No. 310,666

Int. Cl.³ A61K *31/55*; C07D *487/16*

U.S. Cl. 260—245.7 **2 Claims**

1. A compound of the formula



wherein R_1, R_3, R_4, R_5 is hydrogen; R_2 is hydrogen or lower alkyl; Ph is 1,2-phenylene unsubstituted or substituted by one member selected from lower alkyl, lower alkoxy, lower alkylthio, halogeno and trifluoromethyl; C_nH_{2n} is lower alkylene separating both nitrogen atoms by 3 carbon atoms; or pharmaceutically acceptable acid addition salts thereof.

4,362,667

OPTICAL ISOMERS OF 4-AMINO-N-(1-CYCLOHEXYL-3-PYRROLIDINYL)-N-METHYLBENZAMIDE

Albert D. Cale, Jr., Mechanicsville, and Charles A. Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation of Ser. No. 128,692, Mar. 10, 1980, abandoned, which is a continuation of Ser. No. 914,833, Jun. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 658,989, Feb. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 518,125, Oct. 25, 1974, abandoned, which is a continuation of Ser. No. 340,417, Mar. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 240,840, Apr. 30, 1972, abandoned. This application Jan. 21, 1981, Ser. No. 226,868

Int. Cl.³ C07D *207/14*; A61K *31/40*

U.S. Cl. 548—557 **8 Claims**

2. A pharmaceutically acceptable acid addition salt of (+)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide.

4. (+)-4-Amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methyl benzamide fumarate.

4,362,668

SUBSTITUTED ORTHO-QUINONE DIMER

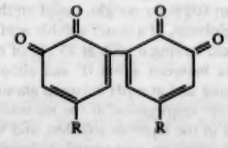
Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 955,930, Oct. 30, 1978, Pat. No. 4,208,340. This application Jul. 31, 1979, Ser. No. 62,333

Int. Cl.³ C07C *50/00*

U.S. Cl. 260—396 R **1 Claim**

1. A dimer of alkylated ortho-quinone having the structure:



wherein R is an alkyl chain of at least 12 carbon atoms or a polymer of an olefin of at least 3 carbon atoms.

4,362,669

URANYL COMPOUNDS EMPLOYING A STRONG BASE

George M. Kramer, Berkeley Heights; Donald M. Cox, Watchung, both of N.J.; Martin B. Dines, Santa Ana, Calif., and Edward T. Maas, Jr., Batavia, Ill., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 25, 1980, Ser. No. 124,306
Int. Cl.³ C07F 5/00; B01D 59/34
U.S. Cl. 260—429.1 21 Claims

1. A composition of matter having the formula $UO_2AA'L_n$, wherein A and A' are anions whose conjugate acids having boiling points of less than about 200° C. and pK_a values of 4.8 or less, and which form chelate rings having more than four members, L is a neutral ligand having a boiling point of greater than about 200° C. and an equilibrium constant for its exchange reaction with the complex of UO_2AA' with tetrahydrofuran of greater than about 10^{-3}, said neutral ligand being selected from the group consisting of primary, secondary and tertiary amines, alkylamineoxides, amides, aldehydes, ketones, lactones, ethers, esters, imides, alkenyl carbonates and phosphorous compounds having the formula

wherein R_1, R_2 and R_3 are selected from the group consisting of ethyl, N-alkylamino, and N,N-dialkylamino groups, and n is an integer from 1 to 4, said composition forming a monomeric species in solution and exhibiting an infrared band at about 950 cm^{-1} having a bandwidth of less than about 10 cm^{-1}.

13. A composition of matter having the formula $UO_2AA'L_n$, wherein A and A' are anions whose conjugate acids have boiling points of less than about 200° C. and pK_a values of 4.8 or less, and which form chelate rings having more than four members, L is a neutral ligand having an equilibrium constant for its exchange reaction with the complex of UO_2AA' with tetrahydrofuran of greater than about 10^3, said neutral ligand being selected from the group consisting of primary, secondary and tertiary amines, alkylamineoxides, amides, aldehydes, ketones, ethers, esters, imides, alkenyl carbonates, lactones, dialkylsulfoxides wherein said alkyl groups include from 2 to 3 carbon atoms, and phosphorous compounds having the formula

wherein R_1, R_2 and R_3 are selected from the group consisting of alkyl, N-alkylamino, and N,N-dialkylamino groups and n is an integer from 1 to 4, said composition forming a monomeric species in solution and exhibiting an infrared band at about 950 cm^{-1} having a bandwidth of less than about 10 cm^{-1}.

4,362,670

ALLYLATION OF CARBON COMPOUNDS

Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 3, 1981, Ser. No. 297,661
Int. Cl.³ C07C 121/70, 49/203, 69/593, 79/06
U.S. Cl. 260—465 K 10 Claims

1. A process for allylating a carbon acid comprising reacting the carbon acid with allyl carbonate in the presence of a palladium catalyst.

4,362,671

SELECTIVE HYDROGENATION OF DINITRILE TO OMEGA-AMINONITRILE CATALYZED BY RHODIUM ORGANONITROGEN COMPLEX CATALYST

Steven E. Diamond, New Providence; Frank Mares, Whippany, both of N.J., and Andrew Szalkiewicz, New York, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 26, 1981, Ser. No. 314,635
Int. Cl.³ C07C 120/00, 121/43
U.S. Cl. 260—465.5 R 11 Claims

1. A process for selectively producing an omega-aminonitrile which comprises reacting at a temperature of between about 20° C. and about 200° C. a dinitrile of the formula $N{\equiv}C{-}(CH_2)_n{-}C{\equiv}N$ with n being an integer from 1 to 10 with hydrogen at a partial pressure of at least about one atmosphere in the presence of:

(a) a solvent, and

(b) a rhodium-containing catalyst prepared by reacting with a strong hydroxide base and then hydrogenating a rhodium complex of the formula (RR'Rh)A wherein R is derived from a non-allenic hydrocarbon diene of at least 4 carbons, R' is an aromatic heterocyclic with at least one aromatic ring nitrogen and only C, N and H and A is a complex monovalent anion which serves as a counteranion for the cation RR'Rh with rhodium being at valence +1;

and recovering the omega-aminonitrile of the formula $N{\equiv}C{-}(CH_2)_n{-}CH_2{-}NH_2$ as the major product.

4,362,672

PROCESS FOR PRODUCING DIFLUOROHALOACETYL FLUORIDE

Masaaki Yamabe, Machida; Seiji Munekata, and Shunichi Samejima, both of Tokyo, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 286,974
Claims priority, application Japan, Aug. 26, 1980, 55-116403
Int. Cl.³ C07C 51/58
U.S. Cl. 260—544 F 11 Claims

1. A process for producing a difluorohaloacetyl fluoride which comprises the steps of:

(a) producing an intermediate having a group of the formula

$$XCF_2CFYOSO_2^-$$

wherein X is I or Br, Y is F, Cl, Br or I; by reacting a polyfluoroethylene of the formula

$$CF_2{=}CFY$$

with a reagent obtained by mixing sulfur trioxide with a halogen selected from iodine and bromine; and

(b) decomposing said intermediate into said product.

4,362,673

MOUNTING A PISTON IN AN ACCELERATOR PUMP OF A CARBURETOR AND ASSOCIATED METHOD

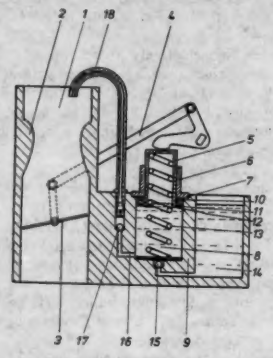
Walter Schauer, Neuss, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,700
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1980, 3031546
Int. Cl.³ F02M 7/08
U.S. Cl. 261—34 A 13 Claims

1. In a carburetor having a housing with an inlet passage and an accelerator pump including a working chamber containing fuel, a piston displaceable in said working chamber to discharge fuel therefrom, and a conduit connected to the working chamber for conveying the discharged fuel to said inlet passage, the improvement comprising a sleeve secured to said housing at one end of said working chamber, said piston being slidably guided by said sleeve for movement into and out of

said chamber, and a sealing ring adjoining said sleeve and including a free sealing lip directed into said chamber and sealingly bearing against said piston.

12. A method of controlling the amount of fuel discharged by an accelerator pump of a carburetor comprising displacing a piston in a working chamber of an accelerator pump to discharge fuel from the working chamber into an intake passage of the carburetor, the piston being part of a replaceable



unit and having a diameter corresponding to a particular amount of fuel to be discharged for a given stroke for the piston, said unit being sealably mounted in the working chamber to provide a desired amount of fuel to be discharged, and removing said unit from the working chamber and inserting another with a different piston diameter into the working chamber to change the amount of fuel discharged from the accelerator pump to the intake passage of the carburetor.

4,362,674

PROCESS FOR MAKING RADIATION CURED SILICONE RUBBER ARTICLES

John G. DuPont, Reading, Mass., and Paul A. Goodwin, Amherst, N.H., assignors to High Voltage Engineering Corporation, Burlington, Mass.

Filed Nov. 28, 1980, Ser. No. 211,252
Int. Cl.³ C08G *77/38*; B29C *25/00*
U.S. Cl. 264—22 **8 Claims**

1. A process for making radiation cured silicone rubber articles comprising the steps of:

(a) forming into a desired shape a mixture of (i) silicone gum which includes a substantial amount of one or more hydroxyl-terminated polysiloxanes having a molecular weight from about 50,000 to about 2,000,000 and (ii) about 10 to about 70 parts per hundred of rubber of a finely divided silica filler with a particle size in the reinforcing range;

(b) treating the mixture so formed with a precuring agent selected from the group consisting of ammonia gas, ammonium hydroxide, vapors of a volatile amine, or a solution of a volatile amine; and

(c) irradiating with high energy ionizing radiation the precured shape.

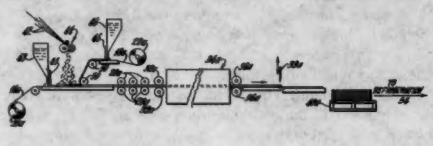
4,362,675

METHOD OF DELAYING HARDENING OF INORGANIC BINDERS

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 51,641, Jun. 25, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,409
Int. Cl.³ B05B *3/00*
U.S. Cl. 264—28 **11 Claims**

1. A method of making rigid articles from cements containing the hydrated reaction products of magnesia and a magnesium salt, said method comprising: mixing magnesium salt, water and magnesia with or without inhibitors to form a slurry having a solids ratio from between 25% and 75% at a temperature between approximately 1° C. and approximately 20° C. and at which temperature the slurry will have a normal period of time before set; subjecting the mixture to a temperature below approximately −20° C. during approximately the first



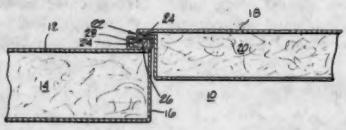
two thirds of said normal period of time before set to freeze the water of the slurry, storing the mixture in a frozen condition for a period of time, thawing the frozen mixture, and molding the partially set mixture using sufficient pressure to reshape the partially set mixture into the final shape of the desired rigid article before five-sixths of said normal period of time before set occurs.

4,362,676

SEAL FOR HEATED ENCLOSURE

James A. Swaidner, and Wendell C. Holzhauer, both of Bowling Green, Ohio, assignors to Manville Service Corporation, Denver, Colo.

Filed Mar. 20, 1981, Ser. No. 245,862
Int. Cl.³ F27D *1/18*
U.S. Cl. 264—35 **3 Claims**



1. A method of providing a seal between a planar surface surrounding an access opening of a heated enclosure and a non-planar peripheral edge of a door which closes said access opening and is subject to repeated openings and closings, comprising:

securing a resilient fibrous insulating material about the periphery of said access opening to said planar surface;

intermixing an uncured, but curable, thermosetting material with said fibrous insulating material;

forcing the non-planar peripheral edge of said door into contact with said fibrous insulating material causing the latter to adopt a configuration compatible with the former;

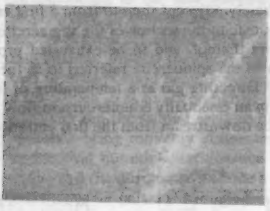
subjecting said fibrous insulating material and intermixed thermosetting material to sufficient heat to cure said thermosetting material, such that said fibrous insulating material permanently adopts said configuration which is compatible with the non-planar peripheral edge of the door so that a seal is formed between said planar surface and said non-planar peripheral edge of the door each time said door is closed, following said repeated openings.

4,362,677

METHOD OF PRODUCING ETHYLENE-VINYL ALCOHOL COPOLYMER HOLLOW FIBER MEMBRANES

Shuzo Yamashita; Taku Tanaka; Hirokuni Tanii, all of Kurashiki; Akira Kubotsu, Soja, and Syuji Kawai, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 142,227, Apr. 21, 1980, Pat. No. 4,317,729. This application Jun. 4, 1981, Ser. No. 270,503
Claims priority, application Japan, Apr. 27, 1979, 54-53031
Int. Cl.[3] B29D *27/00*
U.S. Cl. 264—41 8 Claims



1. A method for producing a hollow fiber membrane of ethylene-vinyl alcohol copolymer, which comprises spinning a spinning solution prepared by dissolving an ethylene-vinyl alcohol copolymer in a solvent selected from the group consisting of dimethyl sulfoxide, dimethylacetamide, pyrrolidone, N-methyl-pyrrolidone or mixtures thereof through a spinneret for hollow fiber production while introducing a coagulating liquid through the central aperture of said spinneret, passing the spun fiber through a gaseous atmosphere while drawing the fiber 3 to 30 times its original length, and subsequently coagulating the fiber in a coagulation bath at a temperature within the range satisfying the following relationship:

$$\text{when } 15 \leqq C \leqq 40, \quad -15 \leqq T \leqq \tfrac{1}{4}C + 3.5$$

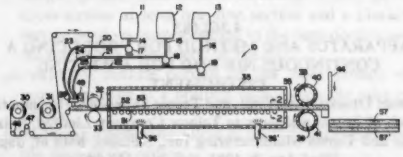
where C is the polymer concentration (weight %) and T is the coagulation temperature (°C.).

4,362,678

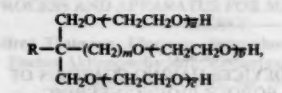
METHOD OF MAKING POLYISOCYANURATE FOAM LAMINATE

Michael J. Skowronski, Clearwater, and Alberto DeLeon, St. Petersburg, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

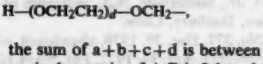
Division of Ser. No. 113,436, Jan. 18, 1980, Pat. No. 4,311,801, which is a division of Ser. No. 911,502, Jun. 1, 1978, Pat. No. 4,212,917. This application Oct. 19, 1981, Ser. No. 312,584
Int. Cl.[3] B32B *3/26, 5/20, 31/14;* B29D *7/14*
U.S. Cl. 264—46.3 13 Claims



1. A process for producing a laminate comprising:
(I) contacting at least one facing sheet with a polyisocyanurate foam-forming mixture comprising:
(A) a polymethylene polyphenylisocyanate;
(B) a polyol having the formula:



wherein m is 0 or 1, R is hydrogen, hydroxyl, lower alkyl or a radical having the formula:



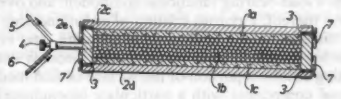
the sum of a+b+c+d is between 2.0 and 8.0, and the equivalent ratio of A:B is 2:1 to 6:1;
(C) a catalyst;
(D) a blowing agent; and
(E) a surfactant; and
(II) foaming said foam-forming mixture.

4,362,679

METHOD OF CASTING CONCRETE

Roman Malinowski, Svealiden 3 D, 431 39 Mölndal, Sweden

PCT No. PCT/SE78/00107, § 371 Date Sep. 4, 1979, § 102(e) Date Sep. 4, 1979, PCT Pub. No. WO79/00473, PCT Pub. Date Jul. 26, 1979
PCT Filed Dec. 28, 1978, Ser. No. 154,391
Claims priority, application Sweden, Jan. 3, 1978, 7800077
Int. Cl.[3] C04B *15/14*
U.S. Cl. 264—82 15 Claims



1. A method of carbonation-hardening a concrete mass, which has already been formed, without using a special curing chamber or autoclave comprising the steps of:
subjecting the formed mass to a vacuum under a hermetic seal simultaneously to dewater the mass and to compact the mass by the action of atmospheric pressure, thereby creating in the mass a capillary system under pressure; and
thereafter, directly introducing carbon dioxide gas into the mass and simultaneously releasing the vacuum, whereby the pressure is removed so that the gas is efficiently and autogenously absorbed into the mass quickly to harden the mass.

4,362,680

PROCESS FOR PRODUCTION OF MOLDED ARTICLES OF ACETYLENE POLYMER

Yukio Kobayashi; Masaaki Kira, both of Yokohama, and Kinya Yamaguchi, Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,905
Claims priority, application Japan, Mar. 21, 1980, 55/34686; Mar. 21, 1980, 55/34687; Mar. 21, 1980, 55/34689; Jun. 4, 1980, 55/74401
Int. Cl.[3] H01B *1/12;* B29C *3/00*
U.S. Cl. 264—83 8 Claims

3. A process for producing a molded article of a high polymer of acetylene having a high electrical conductivity, which comprises press-forming a gel-like material or swollen material composed of 5 to 95% by weight of a high polymer of acetylene having a cis content of at least 50% and a fibrous microcrystal structure and 95 to 5% by weight of an organic solvent at a temperature of not more than 50° C. and a pressure of 10 to 1,000 kg/cm^2, thereafter calendering or monoaxially stretching the resulting molded article and thereafter treating

the molded article further with an electron acceptor or donor substance.

4,362,681

PROSTHETIC DEVICES HAVING COATINGS OF SELECTED POROUS BIOENGINEERING THERMOPLASTICS

Myron Spector, Charleston, S.C.; George T. Kwiatkowski, Greenbrook, N.J.; Walter H. Smarook, Somerville, N.J., and Michael J. Michno, Jr., Somerville, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 377, Dec. 29, 1978, abandoned, which is a division of Ser. No. 787,531, Apr. 14, 1977, Pat. No. 4,164,794. This application Jan. 18, 1980, Ser. No. 113,317

Int. Cl.³ D04H *1/20*

U.S. Cl. 264—112 **15 Claims**

1. A process for the preparation of a prosthetic device comprised of a load-bearing functional component and over at least a portion thereof, a porous coating of an engineering thermoplastic material which is biocompatible with, and conducive for, the ingrowth of bone spicules, said process comprising contacting at least a portion of the surface of said load-bearing functional component with a particulate bioengineering thermoplastic material selected from the group consisting of polysulfones, polyphenylenesulfides, polyacetals, thermoplastic polyesters, polycarbonates, aromatic polyamides, aromatic polyamideimides, thermoplastic polyimides, polyaryletherketones, polyarylethernitriles and aromatic polyhydroxyethers, said thermoplastic material having at least one fraction of a biomodal distribution of average particle diameters within the range from about 7:1 to about 5:1, by heating said particulate thermoplastic material at a temperature and time sufficient to sinter said material to provide a porous coating having a porosity, pore diameter and pore interconnections which enables such device to become firmly and permanently anchored into a musculosketal system in which it is employed by tissue ingrowth into the coating.

4,362,682

CHIP-FREE STAPLE FIBER PROCESS

Gerald A. Berg, Lake Jackson, Tex.; Hermann Buchert, Williamsburg, Va.; Steve R. Duffy, Clute, Tex.; Richard E. Harder, Anderson, S.C.; E. R. Higgs, Clute, Tex.; Louis D. Hoblit; James R. Ryffel, both of Lake Jackson, Tex.; Walter P. Smith, Anderson, S.C., and Edwin L. Stenzel, Morristown, N.J., assignors to Badische Corporation, Williamsburg, Va.

Filed Aug. 21, 1980, Ser. No. 179,583

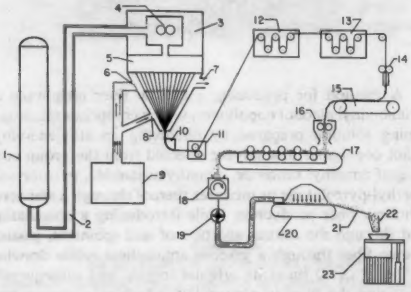
Int. Cl.³ D01D *9/10*

U.S. Cl. 264—143 **7 Claims**

1. A continuous process for the production of a staple fiber product, which process comprises:

A. Spinning an equilibrium melt from a standard hydrolytic or anionic polymerization of caprolactam, the equilibrium melt containing methanol-extractable material including monomeric and oligomeric substances, the equilibrium melt being spun at a temperature of between about 230° and 270° C. through a spinnerette, the spinning take-away speed being less than about 250 meters/minute; the spinnerette having a multiplicity of holes spaced from each other in an asymmetric arrangement wherein the space between adjacent holes increases from each side of the spinnerette to the center thereof and from the front to the back thereof, the front being defined as that section proximate to the first entrance of quench gas, as set forth below, and the back being defined as that section proximate to the exhaust of quench gas, as set forth below;

B. Quenching the molten polycaprolactam in two phases: (1) Directing gas at a temperature of less than 20° C. at a flow rate of between 200 and 500 cubic feet/minute for a polycaprolactam throughput of between about 0.25 to 1 gram/minute/spinnerette hole, to impinge upon the face of the spinnerette and molten polycaprolactam stands immediately adjacent thereto from a first entrance which is proximate to the section of the spinnerette referred to as the front thereof, and to be exhausted proximate to the section of the spinnerette referred to as the back thereof; and (2) Directing gas at a temperature of less than about 20° C. in an essentially countercurrent flow from a second entrance downstream from the first entrance with respect



to the direction of movement of the filamentary polycaprolactam, at a rate which results in reducing the surface temperature of the polycaprolactam to a value between about 30° and 70° C. before drawing thereof as hereinafter defined;

C. Applying a drawing and crimping lubricant and antistatic agent to the surface of the filamentary polycaprolactam;

D. Drawing the filamentary polycaprolactam by conventional means at a total draw ratio between about 3 and 5;

E. Crimping the drawn filamentary polycaprolactam by essentially conventional means;

F. Cutting the crimped filamentary polycaprolactam into staple lengths by conventional means;

G. Subjecting the filamentary polycaprolactam staple to a multiple stage washing procedure for removal of extractables;

H. Drying the washed filamentary polycaprolactam staple by conventional means; and

I. Packaging the dried filamentary polycaprolactam staple for subsequent use or sale.

4,362,683

APPARATUS AND METHOD FOR PRODUCING A CONTINUOUS NIB ROD FOR A WRITING INSTRUMENT

Katsumi Otsuka, Funabashi, and Tetsuo Shimoishi, Hamamatsu, both of Japan, assignors to Teibow Company Limited, Shizuoka and Toplan Manufacturing Inc., Saitama, both of, Japan

Filed Apr. 8, 1981, Ser. No. 252,043

Claims priority, application Japan, Apr. 14, 1980, 55-48880

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—167 **5 Claims**

1. A die apparatus for producing a writing nib made of a synthetic material, said writing nib being comprised, in cross-section, of at least one base portion and rib portions extending

in cantilever fashion from the base portion so as to produce a capillary in the nib therebetween, said apparatus comprising:

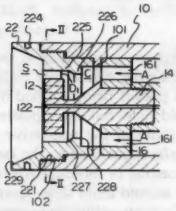
a die body of substantially tubular shape through which a flow of molten synthetic plastic material may pass;

a die core arranged in the die body, said die core having a plurality of angularly spaced radial slits extending along the length of the die core;

a nozzle member arranged around the die core so that at least one orifice having a cross-sectional shape corresponding to that of the nib is formed between the nozzle member and the die core, said orifice having in cross-section at least one first section and a plurality of second sections corresponding to the base portion and the rib portions, respectively, of the nib; and

an integral throttle portion extending from the inner surface of the nozzle member toward the outer periphery of the die core, said throttle portion being arranged adjacent to the inlet of the orifice so as to act on plastic material flow in the first section and the second sections of the orifice;

said nozzle member being movably connected to the die body for controlling the minimum distance between the throttle portion and the die core to provide a desired flow rate of plastic material passing through the first section and the second sections, thereby producing a writing nib of desired capillary area.



5. A method for assembling a die apparatus for producing a writing nib made from synthetic plastic material of a desired capillary area, said writing nib being comprised in cross-section by at least one base portion and a plurality of rib portions, said method comprising the steps of:

providing a die body of substantially tubular shape;

arranging a die core in the die body, the die core having a plurality of angularly spaced slits extending along the length of the die core therethrough;

arranging a nozzle member around the die core so that at least one orifice having a cross-sectional shape corresponding to that of the nib is formed only between the nozzle member and the die core, said orifice having in cross-section at least one first section and a plurality of second sections corresponding to the base portion and the rib portions, respectively, of the nib;

providing a throttle portion on the inner surface of the nozzle member at a position adjacent to the inlet of the orifice;

introducing a pressurized flow of melted plastic material into the inlet of the orifice;

taking out a continuous nib rod from the orifice; and

moving the nozzle member along the length of the die body so that the throttle portion is located on a position with respect to the inlet of the orifice, thereby obtaining a desired length of the rib, i.e., a desired capillary area in the nib.

4,362,684

PROCESS AND APPARATUS FOR MAKING A WELDING SLEEVE

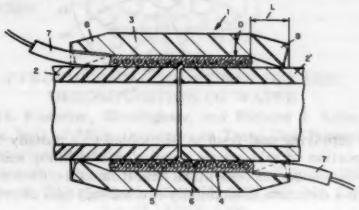
Alfred Thalmann, Uhwiesen, Switzerland, assignor to George Fischer Aktiengesellschaft, Switzerland

Filed Mar. 27, 1981, Ser. No. 248,543

Claims priority, application Switzerland, Mar. 31, 1980, 2531/80

Int. Cl.³ B29C *27/00*; H05B *3/58*

U.S. Cl. 264—230 **11 Claims**



1. A process for producing a welding sleeve, comprising the steps of:

forming a helical coil having a resistance wire in a casing of thermoplastic material with adjacent windings thereof secured together;

mounting the coil on a mandrel;

heating a tubular body of thermoplastic material and pushing the body onto the mandrel to widen and stretch the body over the coil while the body is at a temperature between about 20° and about 40° C. below the temperature of the crystallite melting region of the body thermoplastic material such that ends of the body project axially beyond the coil;

partially cooling and contracting the body about the coil, and shrinking each body end to a conical shape; and

stripping the body off the mandrel with the coil secured on the inside surface thereof and with substantial residual radial contraction strains in the body.

5. An apparatus for forming a welding sleeve having a tubular body of thermoplastic material with a helical coil of a resistance wire encased in thermoplastic material, comprising:

a mandrel having means for receiving a coil thereon and having a conical widening surface, said mandrel including first and second portions separable in a plane substantially transverse to its axial direction, said portions having opposed shoulders for axially retaining the coil and being releasably coupled by a first centering means and first locking means;

at least one pressure member disposed coaxially relative to said mandrel, said mandrel second portion being releasably coupled to said pressure member by a second centering means and a second locking means; and means for moving said pressure member in said axial direction toward and away from said mandrel.

4,362,685

METHOD OF PRODUCING ARTICLES FROM THERMO SETTING RESIN

Francesco Simioni, Padua, Italy, assignor to Safilo S.p.A., Piazza Tiziano, Italy

Filed Jun. 7, 1979, Ser. No. 46,505

Claims priority, application Italy, Jun. 30, 1978, 25185 A/78

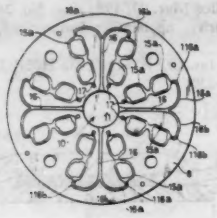
Int. Cl.³ B29C *5/04*

U.S. Cl. 264—297 **17 Claims**

1. A method for molding a resin material in a mold having at least one article impression wherein said article impression is disposed in a centrifugal field about an axis of rotation comprising the steps of:

(a) introducing said resin into said mold at about the axis of rotation thereof;

(b) causing said resin to flow in a centrifugal field toward the periphery of said mold; and



(c) supplying said resin to be molded to a radially outward portion of said article impression and filling said article impression in a centrifugal field from said outward portion in a direction substantially toward said axis of rotation.

4,362,686

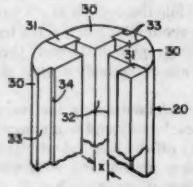
COLLAPSIBLE CORE AND METHOD OF USING SAME

Thomas A. Clishem, Louisville, Ky.; Melvin L. Neville, Jeffersonville, Ind., and Leonard W. Pokallus, Louisville, Ky., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,667

Int. Cl.[3] B28B *1/14, 7/20*

U.S. Cl. 264—317 11 Claims



1. In the process of fusion casting refractory comprising casting molten refractory into the mold cavity of a mold having at least one thermally collapsible core extending into the mold cavity from a surface of the mold at least partially defining the cavity and then solidifying the cast molten refractory therein to form a fusion-cast refactory article with a hollow portion formed by the core, wherein the improvement comprises providing, as the thermally collapsible core, the core of claim 6 said casting being at a tempertaure sufficient to melt said spacers, and causing the segments to move so that all of the mating edges converge toward the collapse axis to permit removal of the segments from the cast refactory.

4,362,687

METHOD AND APPARATUS FOR CASTING OR INJECTION-MOLDING OF CAGES OF CYLINDRICAL ROLLING ELEMENTS

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter; Heinrich Kunkel, both of Schweinfurt; Herbert Dobhan, Bergrheinfeld; Peter Horling, Mainberg, and Norbert Klüpfel, Hambach, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,217

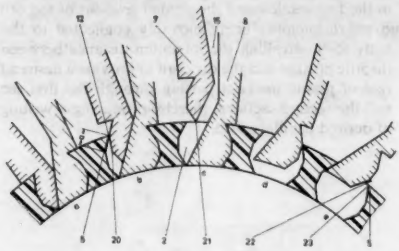
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949251

Int. Cl.[3] B29C *7/00*

U.S. Cl. 264—318 6 Claims

1. In a method for casting or injection-molding cages for retaining cylindrical rolling elements by cage projections, the projections being provided on both the inside and outside of the cage along the lateral surfaces of the webs located between the cage pockets, the method using two mold slides per pocket, the slides being retractable from the pockets and, when in the inserted position, engaging one another along a partition edge inclined to the radial direction of the cage, the slides having lateral surfaces facing away from one another that have shapes equivalent to the shape of the corresponding lateral surfaces of the webs; the improvement wherein, after the cage has been cast or injection-molded, first one slide is pushed out in a slanted direction along the partition edge, until the retaining projection formed by this slide is free, whereupon this slide is further retracted from the cage, in a radial direction; and in that, simultaneously or subsequently, the second slide is retracted from the pocket.

2. In a method for casting or injection molding an annular cage having radially extending pockets therethrough with



circumferential directed projections at their radial inner and outer edges for retaining cylindrical rolling elements in said pockets, each said pocket being formed by a first and second mold slide, the mold slides having oppositely directed faces for forming opposite slides of the respective pockets and having planar abutting surfaces inclined to the radial direction of the cage when in the casting or molding position, the planar abutting surface of the second mold slide decreasing its circumferential width radially outwardly; the improvement in removing the mold slides following casting or molding, comprising first moving said first slide radially outwardly to slide along the inclined planar abutting surface of the second slide until it no longer lies radially under the radially outer projection of the corresponding side of the pocket, then secondly moving the first slide outwardly in the radial direction until it is positioned outside of the respective pocket, and simultaneously or following said second moving step, moving said second slide radially outwardly from said pocket.

4,362,688

METHOD FOR MOLDING A PLASTIC PIPE

Tatsuya Nakagawa, Matsudo, Japan, assignor to Excell Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 53,210, Jun. 29, 1979, Pat. No. 4,239,474. This application Sep. 15, 1980, Ser. No. 187,369

Int. Cl.[3] B29C *17/07*

U.S. Cl. 264—503 5 Claims

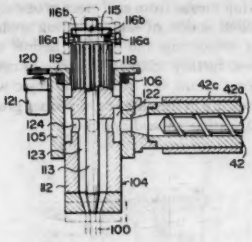
1. A method for molding a plastic pipe comprising the steps of:

positioning a parison discharged out of a parison extruder having a nozzle into and along a first groove provided on a top surface of a bottom mold half and having at least one portion curved relative to a longitudinal axis of said first groove;

maintaining a predetermined distance between said extruder and said first groove during said positioning;

providing relative movement between said first groove and said nozzle along said longitudinal axis during said positioning;

rotating said nozzle over a predetermined angle about a nozzle center axis while positioning said parison along said curved portion such that said rotating is in a direction commensurate with a curvature direction of said curved portion;



placing a top mold half provided with a second groove on said bottom mold half, said first groove being in registry with said second groove to define a mold cavity; and

injecting pressurized gas into the parison in the mold cavity for shaping as defined by the mold cavity.

4,362,689

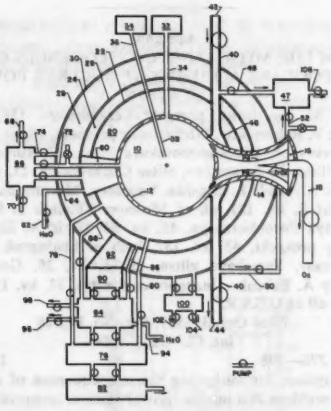
PRODUCTION OF HYDROGEN-BASED GASEOUS FUEL

Theodor Teichmann; Henry J. Gomberg, and Robert J. Teitel, all of Ann Arbor, Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Continuation of Ser. No. 414,367, Nov. 9, 1973. This application Aug. 26, 1976, Ser. No. 718,026

Int. Cl.³ G21B *1/00*; G21G *1/06*

U.S. Cl. 376—148 **10 Claims**



1. The process of disassociating chemical materials to produce output combustible gases with D-T fusion reaction energy, comprising in combination,

(a) establishing a fusion reaction chamber and producing therein a D-T reaction producing heat and neutron radiation,

(b) placing about said reaction chamber at least two additional chambers, a first and a second chamber, isolated from the central chamber and D-T fuel but placed to receive heat and neutron radiation from said D-T reaction passing out of the reaction chamber,

(c) exposing by introduction in additional first chamber carbon containing material which will chemically react by heat and radiation energy from said D-T reaction to produce an output combustible gaseous component,

(d) exposing by introduction in said second additional chamber water which will decompose by heat and radiation energy from said D-T reaction to produce hydrogen, and

(e) removing said gaseous component from said reactor for use in outside systems requiring expenditure of said combustible gaseous component in a chemical process,

(f) placing a lithium blanket surrounding substantially said reaction chamber and said first additional chamber, passing the lithium from said blanket through a heat exchanger.

4,362,690

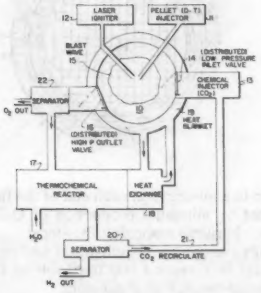
PYROCHEMICAL PROCESSES FOR THE DECOMPOSITION OF WATER

Ralph H. Kummler, Birmingham, and Richard J. Leite, Ann Arbor, both of Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Continuation-in-part of Ser. No. 548,231, Feb. 10, 1975, abandoned. This application Sep. 21, 1976, Ser. No. 725,339

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—148 **4 Claims**



1. The pyrochemical process of decomposition of a chemical raw material which includes water or CO_2 into at least one constituent element in a high energy process in a single thermal step comprising the step of introducing the chemicals into a central reactor chamber with a deuterium-tritium nuclear fuel pellet, irradiating the pellet to produce a deuterium-tritium nuclear reaction of which a fraction of the energy released appears in an expanding blast wave front over a small fraction of a second, chemically decomposing said chemicals in the high temperatures and high pressures introduced by said blast wave, driving the reaction elements wherein the step of removing the constituent element from the reaction chamber comprises opening a distributed valve(s) in said central reactor by said blast wave front to expel said element from said central chamber as a part of the kinetic drive action performed by said blast wave outwardly in the reactor chamber toward an enclosure wall by nuclear reaction, and removing the reaction products from said chamber thereby to produce said constituent element.

4,362,691

PROCESS OF OPERATING A NUCLEAR REACTOR TO MINIMIZE PRODUCTION OF U-232

Linton W. Lang, Richland, Wash., and Robert L. Stetson, Moraga, Calif., assignors to Pacific Nuclear Fuels, Inc., Richland, Wash.

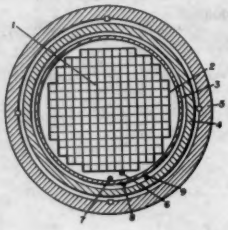
Division of Ser. No. 861,285, Jan. 20, 1978. This application Jan. 14, 1980, Ser. No. 97,108

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—267 **1 Claim**

1. The method of operating a light-water cooled nuclear

power reactor containing both fissile fuel elements and fertile fuel elements in predetermined arrangements, said arrangements comprising a central core having a plurality of first fuel elements therein, each said first fuel element comprising a central section of fissile uranium oxide pellets, outer sections of hollow, thin walled thorium oxide pellets, plenum sections interposed between said central and outer sections, spring and spacer means positioned within said plenum sections, a moderating material positioned on at least one side of each of said plenum sections, cladding enclosing said pellets, a core barrel spaced from and surrounding said central core, a second set of fuel elements spaced from and surrounding said central core and positioned between said central core and said core barrel in spaced relation thereto, a third set of fuel elements surrounding said core barrel in spaced relation thereto, the fuel in said second and third sets of fuel elements consisting of fertile thorium, each of the fuel elements in said second and third sets comprising a plurality of stacked thorium oxide pellets within a cladding wherein all of said thorium oxide pellets are hollow, said hollow thorium oxide pellets having inner diameters which vary axially from a maximum at the radial center of the



fuel element to a minimum at each end of the fuel element, and characterized by minimum production of U-232 due to n,2n reactions on thorium comprising the steps:

(A) initially charging said light-water nuclear power reactor with said first, second and third sets of fuel elements in said predetermined arrangements;

(B) irradiating said first, second and third sets of fuel elements at an average driver fuel rod power output of approximately 7 kw thermal per foot, annually removing and replacing preselected ones of said first fuel elements such that the amount of U-232 mixed with the U-233 in the removed irradiated thorium initially averages 300 to 500 parts per million;

(C) continuing said irradiation of said second and third sets of fuel elements for a period of two to three years at a core power density of 50 to 100 kw thermal per liter;

(D) thereafter removing and replacing the fuel elements in said second and third sets such that the amount of U-232 mixed with the U-233 in the removed irradiated thorium initially averages 300 to 500 parts per million;

(E) further continuing steps (B) through (D).

4,362,692

REACTOR COMPONENT AUTOMATIC GRAPPLE

Paul R. Greenaway, Bethel Park, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1980, Ser. No. 203,307
Int. Cl.³ G21C *19/00*
U.S. Cl. 376—268 **6 Claims**

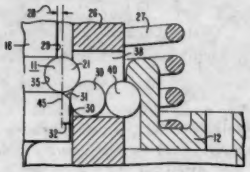
1. A grapple for releasably seizing a reactor component, said grapple comprising:

(a) means for seizing said component;

(b) an impelled actuating stem for actuation of said seizing means having a circumferential stem groove;

(c) means for releasably locking said actuating stem by mechanical intercourse with said stem groove, said stem locking means having a plurality of detent-ball sets, each of said detent-ball sets having three balls adapted to cause one of said balls to roll into said stem groove thereby locking said actuating stem;

(d) a mechanical trigger adapted to sense proper alignment with and seating on said component by said grapple and thereupon unlocking said locking means by withdrawal of said locking means from said stem groove, thereby initiating impelled action of said actuating stem thereby automatically triggering the seizing action of said seizing means, and further adapted to serve in cooperation with said locking means as a mechanical logic which disallows grapple seizure in the absence of proper grapple alignment with and seating on said component;



(e) a grapple subassembly surrounding a lower portion of said actuating stem and surrounding and adapted to support said seizing means, said stem locking means, and said trigger, having at one end means for alignment and having at another end means for grapple subassembly attachment; and

(f) a rising stem subassembly surrounding an upper portion of said actuating stem having at one end means for rising stem subassembly attachment adapted to mate with and releasably attach to said grapple subassembly attachment means.

4,362,693

SYSTEM FOR MITIGATING CONSEQUENCES OF LOSS OF COOLANT ACCIDENT AT NUCLEAR POWER STATION

Anatoly M. Bukrinsky, prospekt Vernadskogo, 119, kv. 19; Julian V. Rzheznikov, Michurinsky prospekt, 16, kv. 35; Jury V. Shvyryaev, Dnepropetrovskaya ulitsa, 23, korpus 3, kv. 117; Viktor P. Tatarnikov, ulitsa Chusovskaya, 11, korpus 8, kv. 24; Alexandr L. Lapshin, Yasenevo, Mikroraion 17, korpus 161-B, kv. 121, all of Moscow; Vladimir I. Sanovich, Bolshaya Porokhovskaya, 45, kv. 64; David A. Zlatin, Zanevsky prospekt, 43, kv. 132, both of Leningrad; Jury A. Kuznetsov, Tverskaya ulitsa, 25/15, kv. 25, Gorky, and Evgeny A. Babenko, Inzhenernaya ulitsa, 32, kv. 12, Sverdlovsk, all of U.S.S.R.

Filed Oct. 3, 1979, Ser. No. 81,526
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—298 **18 Claims**

1. A system for mitigating the consequences of a loss of coolant accident at a nuclear power station, comprising:

a first room confined within a hermetically sealed envelope and having walls and a floor;

a second room confined within a hermetically sealed envelope having walls and a floor;

said first room accomodating therein a reactor plant liable to an accidental loss of coolant and an active-type sprinkler means intended to condense the steam released by the boiling coolant after an accident;

said second room, accomodating a basin-type condenser to condense steam;

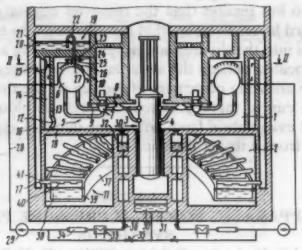
an intermediate chamber positioned between the said first room and the said second room within the said hermetically sealed envelope;

holes provided in said walls of said first room in immediate

proximity to said floor of said first room and spaced at a maximum distance from one another along the perimeter of said walls;

said intermediate chamber communicating with said first room through said holes so that most of the air contained in said first room is forced therefrom as a result of the rising pressure following an accident;

a plurality of vertical channels located within said envelope on the exterior of said intermediate chamber having inlets and outlets and communicating through their inlets with



the upper edge of said intermediate chamber wherefrom air is forced through said inlets into said channels and through their outlets to said basin-type condenser, so that steam released as a result of an accident is condensed and air forced through said outlets of said channels is discharged into said second room;

the length of said channels being selected so as to form a water lock to prevent the backflow of air from the second room to the first and thus produce rarefaction in said first room.

4,362,694

LIQUID METAL-COOLED NUCLEAR REACTOR

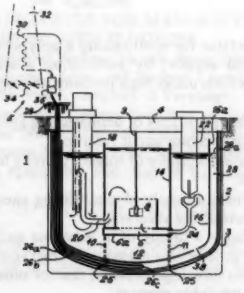
Gaston Kayser, Aix en Provence, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 11, 1980, Ser. No. 167,703

Claims priority, application France, Jul. 17, 1979, 79 18452

Int. Cl.³ G21C *9/00*

U.S. Cl. 376—298 **6 Claims**



1. A nuclear reactor cooled by a primary liquid metal and comprising: a main vessel having a bottom wall and a side wall, a slab sealing said main vessel, a core, an inner vessel within said main vessel and containing said core, a support for positioning and supplying said core with said primary liquid metal, a supporting structure bearing on said bottom wall and supporting said support, at least one main exchanger and at least one primary pump suspended from said slab, said reactor further comprising a baffle located in the main vessel and cladding said side wall and said bottom wall to define with said main vessel an intermediate space filled with said primary liquid metal, tubes located within said intermediate space for supplying from an auxiliary exchanger a cooling liquid metal to a part of said space defined between said baffle and said bottom wall of the reactor vessel, and tubes located within said intermediate space for returning said cooling liquid metal to said auxiliary exchanger, in order to remove heat from said intermediate space.

4,362,695

FISSION PRODUCT FILTER FOR HOT REACTOR COOLANT

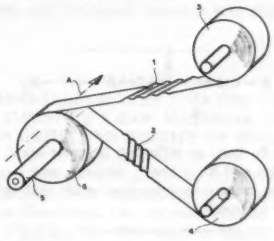
Siegfried Förster, Alsdorf; Nicolaos Ionitakis, Jülich, and Peter Quell, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,886

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937209

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—314 **9 Claims**



1. In a fission product filter for a hot reactor coolant gas, especially helium, comprising a gas-tight chamber traversed by said gas during circulation thereof along a path and containing a filter element composed of a material capable of retaining fission products from said gas by material-exchange interaction of said gas with said filter element, said filter element being formed with passages traversed by said gas, the improvement wherein said filter element comprises at least one coil body composed of two corrugated metal strips having crests in direct contact with one another and coiled together upon a core, the corrugations of the two strips mutually crossing where said strips contact one another in adjacent turns so that a zig-zag pattern of flow is established for said gas through said coil body and the passages are formed around the mutually contacting crests of adjacent turns.

4,362,696

CORROSION-RESISTANT FUEL CLADDING ALLOW FOR LIQUID METAL FAST BREEDER REACTORS

William F. Brehm, Jr., Richland, and Richard P. Colburn, Pasco, both of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 21, 1979, Ser. No. 41,273

Int. Cl.³ G21C *3/06*

U.S. Cl. 376—417 **3 Claims**

1. A LMFBR coated nuclear fuel element cladding tube comprising;

a stainless steel alloy containing at least 10% nickel; a means for reducing radially outward diffusion of a radionuclide formed in said stainless steel alloy during irradiation; wherein said radionuclide is ^{54}Mn; a means for reducing liquid sodium wastage of said tube; an aluminide coating of about 1 to 1.5 mils in thickness formed by diffusing aluminum into a surface of said tube; said aluminide coat-

ing comprising said means for reducing radially outward diffusion and said means for reducing liquid sodium wastage of said tube; and wherein said aluminide coating comprises nickel aluminide phases and is substantially free of silicon.

4,362,697

HOMOGENEOUS SPECIFIC BINDING ASSAY TEST DEVICE HAVING COPOLYMER ENHANCING SUBSTANCE

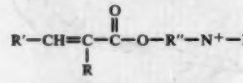
David L. Tabb, and Richard J. Tyhach, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 20, 1981, Ser. No. 255,759
Int. Cl.³ G01N *33/52, 33/54*
U.S. Cl. 422—56 **5 Claims**

1. A test device for determining the presence of a ligand in, or the ligand binding capacity of a liquid sample, comprising

(a) reagents for a homogeneous specific binding assay system capable of producing a detectable response which is a function of the presence of the ligand in or the ligand binding capacity of the sample;

(b) an enhancer substance comprising a quaternized copolymer of vinylpyrrolidone and a comonomer having the structure



in which R, same or different, is lower alkyl, R′ is H or lower alkyl and R″ is lower alkylene; and

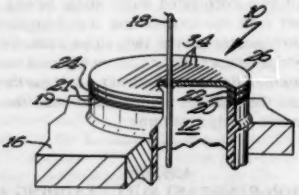
(c) a carrier matrix incorporated with said reagents and enhancer substance.

4,362,698

CLOSURES FOR FLUID SAMPLE CUPS

Nicholas T. Boosalis, and George E. Sherman, both of Minneapolis, Minn., assignors to Sherman-Boosalis Corporation, Minneapolis, Minn.

Filed Mar. 7, 1980, Ser. No. 128,075
Int. Cl.³ B01L *3/00*; B65D *51/00, 41/00*
U.S. Cl. 422—102 **28 Claims**



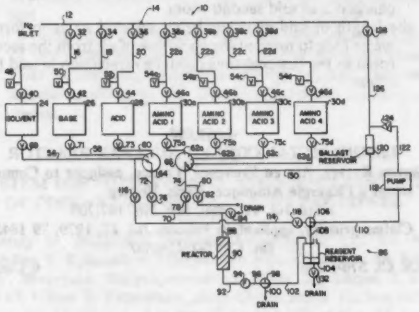
1. A multilayer cap for use in connection with blood sample cups used in a blood analyzer including a pipette which enters the blood sample cups through the open end of the sample cup and extends past the rim of the cup into the interior of the cup to thereby remove a sample of the blood from the cup, comprising, in combination: a first layer; a second, rigidifying layer adhered to the first layer; and a third, adhesive layer adhered to the second layer having exposed adhesive allowing the multilayer cap to be adhesively adhered to the rim of the open end of the blood sample cup, with the second and third layers each having a removed portion for allowing the pipette to pass therethrough; means formed in the first layer for allowing the pipette of the blood analyzer to forgivingly extend through the first layer without piercing it and to pass through the removed portions of the second and third layers and into the interior of the sample cup to thereby remove a sample of blood and for insuring the automatic operation of the blood analyzer even though the location where the pipette of the blood analyzer extends into the sample cup varies and theplacement of the cap on the sample cup may vary between the sample cups of the blood analyzer, with the forgivingly extend allowing and automatic operation insuring means comprising an area of slits, with the first layer being formed of material having elastic characteristics allowing sealing of the first layer between the slits before and after entry and withdrawal of the pipette and between the pipette and the slits during and while entry and withdrawal of the pipette, with the slit area being substantially equal to but smaller than the removed portion of the second and third layers to insure that the pipette of the blood analyzer extends into the slit area and not the remaining area of the first layer located outside the slit area, and with the dimensions of the cap allowing placement of the cap on the rim of the blood sample cup to thereby effectively seal the blood sample cup against evaporation from within the cup and against contamination from without the cup.

4,362,699

APPARATUS FOR HIGH PRESSURE PEPTIDE SYNTHESIS

Michael S. Verlander, Del Mar; William D. Fuller, San Diego, and Murray Goodman, La Jolla, all of Calif., assignors to Bio Research, Inc., La Jolla, Calif.

Filed Mar. 10, 1981, Ser. No. 242,232
Int. Cl.³ B01J *8/02*; C07C *103/52*; G05D *16/00*
U.S. Cl. 422—131 **9 Claims**



1. An apparatus for synthesizing a polypeptide chain on an insoluble solid support by performing a series of stepwise coupling reactions under high pressure, the apparatus comprising:

means defining a supply of deprotecting agent thereby forming a deprotecting agent reservoir;

means defining a supply of solvent thereby forming a solvent reservoir;

means defining a supply of neutralizing agent thereby forming a neutralizing reservoir;

means defining a supply of at least one amino acid thereby forming at least one amino acid reservoir;

a continuous flow high pressure reactor substantially packed with an insoluble support;

means to selectively couple each said reservoir fluidly to said reactor;

a high pressure pumping means for transfering the fluids contained in said reservoirs through said reactor under high pressure;

a recycle loop means for recycling back through said reactor the amino acid which is delivered to said reactor, said recycle loop means including means defining a reagent reservoir in which the fluid being recycled is accumulated, a recycle pump means for transfering the fluid accumulated in said reagent reservoir back to said reactor, and

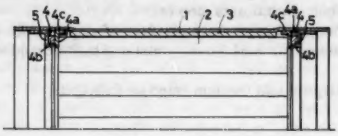
a means for maintaining said reactor under high pressure during recycling such that the synthesis of the polypeptide chain occurs in said reactor under a pressure of at least about 40 psi.

4,362,700

CATALYTIC CONVERTER

Tadayoshi Hayashi, Fujimi; Ikuo Kajitani, Hanno; Katsusuke Ueno, and Yutaka Noritake, both of Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,286
Claims priority, application Japan, Mar. 12, 1980, 55-30349
Int. Cl.³ F01N *3/10*
U.S. Cl. 422—179 **5 Claims**



1. In a catalytic converter including a casing having an inner circumferential surface, a catalyzer carrier located within the casing and having opposite ends and end edges, support members located within the casing at the respective ends of the catalyzer carrier, annular metal rings engaged with the respective ends of the catalyzer carrier, and an annular cushion member supported by each support member and compressively engaged by the adjacent annular metal ring, the improvement comprising:

at least one of said annular metal rings being comprised by a second cushion member having a bulk density which is higher than that of said first mentioned cushion member;

said second cushion member being L-shaped in transverse cross-section including a radial flange engaged between said catalyzer carrier and said first cushion member, and a radially outer axial flange engaged with said inner surface of said casing and having an inner periphery sized so as to form a gap between said end edge of said catalyzer carrier and said inner periphery of said axial flange.

4,362,701

ROTATING APPARATUS FOR MANUFACTURING HYDROGEN FLUORIDE

Jörg Krüger, Schwandorf; Roland Thome, Bonn; Dieter Moritz, Lünen; Hubert Bings, Lünen, and Herbert Losert, Lünen, all of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Division of Ser. No. 198,217, Oct. 17, 1980, Pat. No. 4,294,816. This application Mar. 27, 1981, Ser. No. 248,522
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942439
Int. Cl.³ B01J *4/00, 8/10, 19/28*
U.S. Cl. 422—194 **7 Claims**

1. Apparatus for the manufacture of hydrogen fluoride from carbon and fluoride containing solid materials, which comprises:

a relatively hollow, cylindrical enclosure;

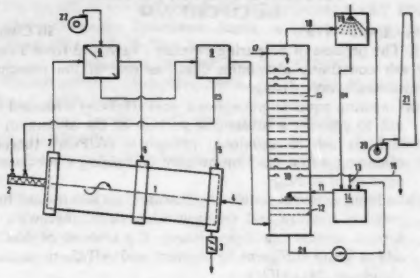
means for rotating said enclosure about its longitudinal axis;

said enclosure having an inlet for solid material reactants, an outlet for gaseous products and an outlet for solid products;

a sleeve mounted coaxially within said enclosure at a first end of said enclosure, said sleeve provided with a series of radially extending heat-exchange plates, said plates having outer edges in spaced relation with the enclosure, said first end of said enclosure opposed to said inlet for said reactants;

means for injecting steam circumferentially within said sleeve;

means at said first end of said enclosure for injecting steam between said sleeve and said cylindrical enclosure;



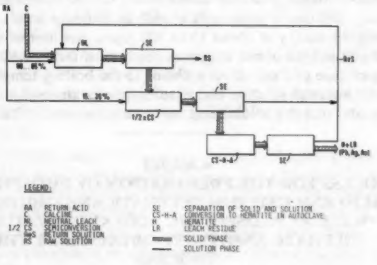
means for tangentially injecting oxygen into said cylindrical enclosure; said means disposed at an interior face of said enclosure, and positioned between said sleeve and said inlet.

4,362,702

HYDROMETALLURGICAL PROCESS FOR THE TREATMENT OF A RAW MATERIAL WHICH CONTAINS OXIDE AND FERRITE OF ZINC, COPPER AND CADMIUM

Jussi K. Rastas; Jens R. Nyberg, both of Pori; Kauko J. Karpale, Ulvila, and Lars-Göran Björkqvist, Espoo, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Sep. 29, 1981, Ser. No. 306,705
Claims priority, application Finland, Sep. 30, 1980, 803097
Int. Cl.³ C22B *3/00*; C01G *49/06*
U.S. Cl. 423—41 **4 Claims**



1. A hydrometallurgical process for the treatment of a raw material which contains an oxide and a ferrite of at least one element selected from the group comprising zinc, copper and cadmium, comprising: neutral leaching the raw material by means of a sulfuric-acid-bearing solution in order to leach the oxide without substantial dissolving of ferrite; separating a ferrite-bearing residue; mixing a sulfuric-acid-bearing or ferri-sulfate-bearing solution or a mixed solution with the residue in such a quantity that approximately 50–60% of the ferrite dissolves and its iron is precipitated as jarosite in the presence of alkali or ammonium ions under atmospheric conditions at 80°–105° C.; separating a solid phase from the solution; and treating a slurry of the solid phase at such elevated pressure and temperature that the zinc of the solid phase is converted to zinc sulfate and the iron to hematite in accordance with the following reaction:

$$(5)\quad 3ZnFe_2O_{4(s)}+2A[Fe_3(SO_4)_2(OH)_6]_{(s)}\rightarrow 3ZnSO_{4(aq)}+A_2SO_{4(aq)}+6Fe_2O_{3(s)}+6H_2O_{(aq)}\ (A=K,\ Na,\ NH_4)$$

4,362,703

PROCESS FOR PREPARING CRYOLITE FROM FLY ASH

Mustafa Boybay, and Turgut Demirel, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 1, 1982, Ser. No. 353,066
Int. Cl.³ C01F 7/54
U.S. Cl. 423—116 10 Claims

1. The process of preparing cryolite (Na_3AlF_6) from a coal fly ash containing aluminum oxide as one of the principal constitutents, comprising:

(a) reacting aqueous phosphoric acid (H_3PO_4) with said fly ash to convert a substantial portion of the aluminum of said fly ash to aluminum phosphate ($AlPO_4$), thereby obtaining a first reaction mixture containing a substantial amount of $AlPO_4$;

(b) adding aqueous sodium hydroxide (NaOH) to said first reaction mixture and reacting said NaOH therewith to form a second reaction mixture, the amount of NaOH added being sufficient to convert said $AlPO_4$ to sodium aluminate (Na_3AlO_3);

(c) separating the undissolved solids from said second reaction mixture to obtain a solution containing said Na_3AlO_3;

(d) adding hydrogen ions (H^+) and fluoride ions (F^-) to said Na_3AlO_3 contaning solution to form cryolite as a precipitate, said addition being continued to a final pH below 9.0; and

(e) separating the precipitated cryolite from the residual solution.

4,362,704

COBALT LEACHING PROCESS

Patrick R. Taylor, 838 Truman, Moscow, Id. 83843, and Jonathan P. Vanderloop, 16885 Crestview Dr., Victorville, Calif. 92392

Continuation of Ser. No. 98,350, Nov. 29, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 214,657
Int. Cl.³ C01G 51/10
U.S. Cl. 423—150 13 Claims

1. The process for separating cobalt from cobalt arsenic sulfide-containing ore or concentrate which comprises contacting said ore or concentrate with an aqueous solution consisting essentially of about 10 to 300 grams per liter of sulfuric acid and at least about 10 grams per liter of ferric sulfate, at a temperature of from about ambient to the boiling temperature of said aqueous solution and at substantially atmospheric pressure, and thereby solubilizing and extracting said cobalt.

4,362,705

PROCESS FOR THE PREPARATION OF PHOSPHORIC ACID AND CALCIUM SULPHATE ANHYDRITE AS WELL AS PHOSPHORIC ACID AND CALCIUM SULPHATE ANHYDRITE OBTAINED BY THIS PROCESS

Cornelis A. M. Weterings, Stein, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Jul. 15, 1981, Ser. No. 283,723
Claims priority, application Netherlands, Jul. 15, 1980, 8004058
Int. Cl.³ C01F 1/00, 5/00, 11/00; C01B 25/6
U.S. Cl. 423—167 6 Claims

1. A process for the preparation of phosphoric acid and calcium sulphate anhydrite comprising the steps of,

(a) digesting phosphate rock with a digesting liquor comprising sulphuric acid from the sulphuric and phosphoric acid liquor of step (d) and the acid recrystallization liquor of step (j) to form a resultant mixture comprising phosphoric acid and calcium sulphate dihydrate.

(b) separating out said calcium sulphate dihydrate from said phosphoric acid.

(c) discharging said phosphoric acid.

(d) washing said separated calcium sulphate of step (b) with a wash liquid comprising water and an acid wash liquor from step (h) and passing the resultant sulphuric and phosphoric acid liquor to the phosphate digestion of step (a).

(e) separating said washed calcium sulphate dihydrate of step (d), into a fine fraction and a coarse fraction.

(f) discharging said fine fraction.

(g) removing at least a portion of the entrained liquor from said coarse fraction.

(h) washing said coarse fraction dihydrate of step (g) with a wash liquor containing sulphuric acid from step (k) and passing the resultant acid wash liquor to step (d).

(i) recrystallizing said washed coarse fraction of step (h) with concentrated sulphuric acid at elevated temperature into calcium sulphate anhydrite.

(j) separating said anhydrite from the acid recrystallization liquor and passing said acid recrystallization liquor to the phosphate digestion of step (a).

(k) washing said separated anhydrite of step (j) with water and passing the wash liquid containing sulfuric acid to step (h).

(l) discharging said calcium sulphate anhydrite.

4,362,706

STABILIZER SYSTEM FOR COMMERCIAL HYDROGEN PEROXIDE

Paul E. Willard, Skillman, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 20, 1981, Ser. No. 323,168
Int. Cl.³ C01B 15/37, 15/01
U.S. Cl. 423—273 6 Claims

1. A composition comprising an aqueous hydrogen peroxide solution and a stabilizing amount of an organic phosphonic acid and a stabilizing amount of a compound selected from the group consisting of benzene phosphonous acid, 2,2'-dithiobenzoic acid, 1-allyl-2-thiourea, thiocarbanilide, and salts thereof.

4,362,707

PREPARATION OF CHLORINE DIOXIDE WITH PLATINUM GROUP METAL OXIDE CATALYSTS

Kenneth L. Hardee, Middlefield; Arnold Z. Gordon, Lyndhurst; Charles B. Pyle, Chardon, and Rajat K. Sen, Cleveland Heights, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Apr. 23, 1981, Ser. No. 256,969
Int. Cl.³ C01B 11/02
U.S. Cl. 423—478 18 Claims

1. A process for the generation of ClO_2 comprising the steps of:

(1) providing a chlorate containing feedstock selected from a group consisting of aqueous solutions of alkali metal chlorates and alkaline earth metal chlorates;

(2) providing an acid feedstock;

(3) providing a catalyst comprising a mixture of a valve metal oxide and at least one of ruthenium oxide, iridium oxide, palladium oxide, rhodium oxide and platinum oxide;

(4) combining the feedstocks and reacting the combined feedstocks in contact with the catalyst at a temperature greater than 20° C.; and

(5) stripping and recovering ClO_2 from the combined feedstocks.

4,362,708

PREPARATION OF ACICULAR GAMMA-IRON(III) OXIDE OF HIGH COERCIVE FORCE

Manfred Ohlinger; Hans Reichert, both of Frankenthal; Guenter Vaeth, Limburgerhof; Friedrich R. Faulhaber, Mutterstadt; Horst Autzen, Freinsheim; Peter Rudolf, Neuhofen, and Joachim Werther, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 320,014
Int. Cl.³ C01G 49/06
U.S. Cl. 423—634 3 Claims

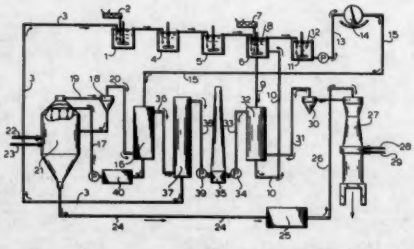
1. A process for the preparation of highly coercive acicular gamma-iron(III) oxide from acicular iron(III) oxide hydroxide at a temperature of from 190° to 700° C. comprising: continuously passing the iron(III) oxide hydroxide into a first zone of a furnace having two or more heating zones, the temperature of the first zone being maintained at from 190° to below 250° C., said iron(III) oxide hydroxide being dehydrated to acicular α-iron(III) oxide; conveying the α-iron(III) oxide into the remaining heating zone or zones which zone or zones are at a temperature of from 300° to 700° C. and reducing the α-iron-(III) oxide to magnetite in said remaining zone or zones by means of a gaseous mixture of an inert gas and an organic substance that is decomposable at a temperature above 250° C. in the presence of iron oxide and which has a boiling point above 250° C.; and thereafter oxidizing the magnetite to acicular gamma-iron(III) oxide with an oxygen containing gas at from 150° to 400° C., wherein the gaseous mixture acting as the reducing agent is produced by passing a stream of inert gas heated to above 250° C. through said organic substance which is also heated to above 250° C., said inert gas being heated to a temperature not less than the temperature to which the organic substance is heated, and the gaseous mixture on introduction into the furnace is first brought into contact with the α-iron-(III) oxide entering said remaining heating zone or zones.

4,362,709

PROCESS OF PREPARING SINTER MAGNESIA

Helmut Grohmann, Bruck an der Mur, and Peter Stadler, St. Jakob bei Mixnitz, both of Austria, assignors to Veitscheer Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

Filed Nov. 2, 1981, Ser. No. 318,970
Claims priority, application Austria, Nov. 7, 1980, 5492/80
Int. Cl.³ C01F 5/06
U.S. Cl. 423—636 8 Claims



1. A process of preparing sinter magnesia from magnesium oxide in a sintering kiln evolving flue gases including hydrochloric acid and sulfur dioxide during sintering, the magnesium oxide being prepared by the thermal decomposition of a magnesium chloride sol derived from a slurry of a magnesium-containing starting material dissolved in hydrochloric acid to form a magnesium chloride slurry and subsequent treatment of the slurry to precipitate and remove impurities therefrom, comprising the steps of washing said flue gases before removal thereof from the kiln to the atmosphere with a portion of the magnesium chloride slurry formed during the preparation of the magnesium oxide, and recycling the magnesium chloride slurry used for washing the flue gases to the slurry wherefrom the magnesium sol is derived.

4,362,710

FEEDS FOR BABY PIGS, PROCESS FOR PREPARING THE SAME AND METHOD OF BREEDING BABY PIGS

Yoshiko Watanabe, Yokohama, Japan, assignor to Nissan Gosei Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,975
Claims priority, application Japan, Jul. 4, 1980, 55-94461[U]; Dec. 2, 1980, 55-169855
Int. Cl.³ A61K 9/20, 31/295, 33/26
U.S. Cl. 424—14 12 Claims

1. A process for preparing a feed for baby pigs, which comprises:

(a) preparing a mixture of an edible iron salt selected from at least one member of the group consisting of ferrous fumarate, iron citrate, iron DL-threonine, sodium iron citrate succinate, and iron sulfate, in an amount corresponding to 3.2 to 16.4% by weight as iron; an additional edible organic acid selected from at least one member of the group consisting of citric acid, succinic acid, gluconic acid, malic acid and fumaric acid or a salt thereof in an amount of 1 to 10% by weight, which is in solid form at room temperature; small amounts of a sweetener, a flavoring and, if desired, vitamins: and an oligosaccharide-containing base as the balance of the mixture;

(b) shaping the mixture into pellets having desired shapes; and

(c) heating the mixture at a temperature of at least 70° C. to produce a product having a water content of not more than 7%.

4,362,711

BLOOD CHOLESTEROL LEVEL REDUCING AGENT AND METHOD

Anthony Cerami, Flanders, N.J., assignor to Evreka Inc., Flanders, N.J.

Filed Jul. 11, 1980, Ser. No. 167,706
Int. Cl.³ A01N 25/28; A61K 9/50; B01J 13/02
U.S. Cl. 424—33 18 Claims

1. An agent for reducing the cholesterol level in the blood of a warm blooded animal comprising a plurality of vesicles prepared from a non-toxic, non-biodegradable, semi-permeable material and a quantity of a bile acid sequestrant provided in liquid form,

wherein said sequestrant is selected from the group consisting of tetra heptylammonium chloride, poly N,N dimethyl-3,5-dimethylene piperidinium chloride, 1,5 dimethyl-1,5-diazoundecamethylene polymethylbromide, polyvinylamine HCl, polyvinylbenzyl trimethylammonium chloride, iron dextran complex and saccharated iron oxide.

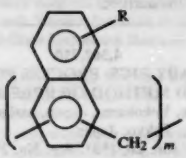
4,362,712

CARBOXYLATED NAPHTHALENE FORMALDEHYDE CONDENSATION POLYMERS AS DENTAL PLAQUE BARRIERS

Carl J. Buck, Berkeley Heights, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Jul. 25, 1980, Ser. No. 172,494
Int. Cl.³ A61K 7/16, 31/765; C08G 6/00, 2/00
U.S. Cl. 424—49 4 Claims

1. An oral hygiene composition comprising an effective amount for preventing deposition of dental plaque on teeth of a condensation polymer of formaldehyde with a naphthalene compound selected from the group consisting of 1-napthoic acid, 2-naphthoic acid, 1-naphthylacetic acid and 2-naphthylacetic acid, said polymer having repeating units of structure (A),



(A)

wherein R is selected from the group consisting of —COOM and —CH_2COOM, n is such that the molecular weight of said polymer is from about 500 to about 10,000, and M is selected from the group consisting of lithium, sodium, and potassium, in a pharmaceutically acceptable oral hygiene vehicle compatible with said polymer.

4,362,713

SALTS OF MALEIC ACID COPOLYMERS AS DENTAL PLAQUE BARRIER AGENTS

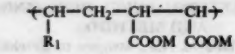
Carl J. Buck, Berkeley Heights, N.J., assignor to Johnson & Johnson Products Inc., New Brunswick, N.J.

Filed Jul. 25, 1980, Ser. No. 172,496

Int. Cl.³ A61K *7/22, 31/74, 31/19;* **C08F** *30/04*

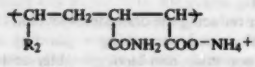
U.S. Cl. 424—54 **6 Claims**

1. An oral hygiene composition comprising an effective amount for preventing deposition of dental plaque on teeth of a maleic acid copolymer having repeating units selected from the group consisting of structure (A),



(A)

and structure (B),



(B)

wherein R_1 is a linear alkyl group of 4 to 12 carbon atoms, R_2 is a linear alkyl group of 4 to 16 carbon atoms or a phenyl group, and M is sodium, potassium, or an ammonium ion derived from ammonia, the maleic acid comonomer concentration in each of said structures (A) and (B) being about 50 mole percent, the molecular weight of said copolymer being from about 10,000 to about 50,000, in a pharmaceutically acceptable oral hygiene vehicle compatible with said polymer.

4,362,714

TENSIO-ACTIVE POLYPOD COMPOUNDS, PROCESS FOR PREPARING THEM AND COMPOSITIONS CONTAINING THEM

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

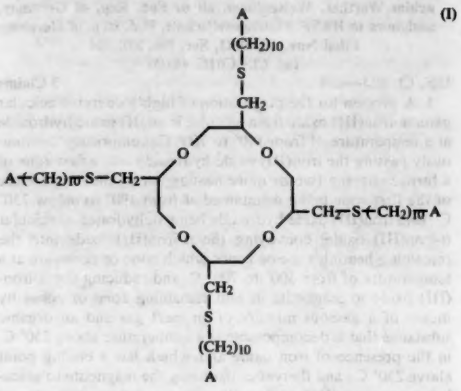
Division of Ser. No. 56,204, Jul. 10, 1979, Pat. No. 4,290,956. This application May 26, 1981, Ser. No. 266,992

Claims priority, application France, Jul. 13, 1978, 78 21081

Int. Cl.³ A61K *7/06*

U.S. Cl. 424—70 **8 Claims**

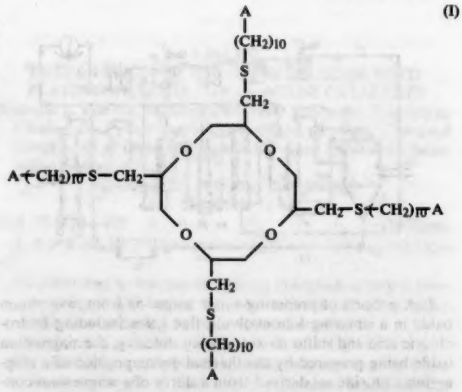
5. Cosmetic shampoo and conditioner composition for the treatment of hair, comprising a cosmetically effective quantity of one or several compounds of the general formula:



(I)

wherein A refers to a cationic, anionic, zwitterionic or non-ionic hydrophile block which includes one or more groupings, identical or different, selected from the group consisting of amine, ammonium, ammonio alkyl carboxylate, ammonio alkyl sulfonate, carboxylic amide, ether, thioether, hydroxyl, carboxylic ester and carboxylic acid groupings.

8. Process for the shampoo and conditioning treatment of the hair consisting of application on human hair of an effective quantity of a composition containing, as a solution in a solvent chosen from a group formed by water and a hydroalcoholic solution, a cosmetically effective quantity of one or several tensio-active cyclic polyethers of the general formula:



(I)

wherein A refers to a cationic, anionic, zwitterionic or non-ionic hydrophile block which comprises one or more groupings, identical or different, selected from the group consisting of amine, ammonium, ammonio alkyl carboxylate, ammonio alkyl sulfonate, carboxylic amide, ether, thioether, hydroxyl, carboxylic ester and carboxylic acid groupings.

4,362,715

COSMETIC VEHICLE

Sabbat J. Strianse, Caldwell; Howard S. Sherry, Cherry Hill, both of N.J., and Elliot P. Hertzenberg, Wilmington, Del., assignors to PQ Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 145,514, May 1, 1980, abandoned. This application Dec. 5, 1980, Ser. No. 213,262

Int. Cl.[3] A61K *7/02, 7/32, 7/48, 9/06, 31/74, 31/78, 47/00*

U.S. Cl. 424—78 13 Claims

1. A cosmetic vehicle comprising a carboxyvinyl polymer with active carboxyl groups and a zeolite having the formula:

$$M_{x/n}[(AlO_2)_x(SiO_2)_y]zH_2O$$

wherein x and y are integers greater than 6, the molar ratio of x to y is 0.1 to 1.1, z varies from 8 to 250 and M is a metal of valence n, said polymer-zeolite composition being a creamy gel with a pseudoplastic viscosity and having a pH of 5.5 to 8.5.

4,362,716

DIPEPTIDES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Jean Bouchaudon, Morsang-sur-Orge; Daniel Farge, Thiais, and Claude James, Paris, all of France, assignors to Rhone-Poulenc Industries, France

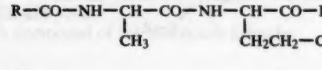
Filed Jun. 27, 1980, Ser. No. 163,877

Claims priority, application France, Jun. 29, 1979, 79 16843

Int. Cl.[3] A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 24 Claims

1. A dipeptide of the formula:



in which R-CO represents a fatty acid residue and the symbols R_1, which are identical or different, represent a hydroxyl or amino radical or an alkoxy radical of 1 to 4 carbon atoms, which is unsubstituted or substituted by a phenyl or nitrophenyl radical, the alanine residue being in the L form and the residue of glutamic acid or derivative thereof being in the D form, and the metal salts and addition salts with nitrogen-containing bases of the said dipeptide.

4,362,717

BIOLOGICALLY ACTIVE AMIDES

Samuel Wilkinson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 927,271, Jul. 24, 1978, Pat. No. 4,244,944. This application Sep. 28, 1980, Ser. No. 192,071

Claims priority, application United Kingdom, Nov. 24, 1977, 48980/77

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 2 Claims

1. A method for the treatment or prophylaxis of a cough in a mammal comprising administering to the mammal a non-toxic, anti-tussive effective dose of Tyr.D-Met.Gly.Phe(4-NO_2).ProNH_2 or a pharmaceutically acceptable acid addition salt thereof.

4,362,718

AGENT FOR CURING PERIPHERAL CIRCULATION INSUFFICIENCY

Hiroshi Maeda, and Katsuhide Nishi, both of Kumamoto, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP80/00158, § 371 Date Mar. 13, 1981, § 102(e) Date Mar. 13, 1981, PCT Pub. No. WO81/00208, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 8, 1980, Ser. No. 245,651

Claims priority, application Japan, Jul. 13, 1979, 54-89074

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 2 Claims

1. A method of curing peripheral circulation insufficiency comprising administering a therapeutically effective amount of α_1-acid glycoprotein to a patient suffering from the same.

4,362,719

THERAPEUTIC METHOD AND COMPOSITIONS FOR THE TREATMENT OF JUVENILE DIABETES MELLITUS

Claudio Cavazza, 35, Via Marocco, Rome, Italy (00144)

Filed May 15, 1981, Ser. No. 264,044

Claims priority, application Italy, May 15, 1980, 48692 A/80

Int. Cl.[3] A61K *31/26, 31/205*

U.S. Cl. 424—178 4 Claims

1. A sterile injectable pharmaceutical composition comprising:

(a) insulin in a concentration of from about 20 to about 30 U/ml of composition;

(b) at least one member selected from the group consisting of L-carnitine and the acetyl, propionyl, butyryl or hydroxybutyryl ester of L-carnitine in a concentration providing from about 0.2 to about 1 g/ml of composition; and

(c) a pharmaceutically acceptable and injectable liquid carrier.

4,362,720

SYNTHESIS OF 2-AMINO-2-DEOXYGLYCOSES AND 2-AMINO-2-DEOXYGLYCOSIDES FROM GLYCALS

Raymond U. Lemieux, and R. Murray Ratcliffe, both of Edmonton, Canada, assignors to Chembiomed Ltd., Edmonton, Canada

Division of Ser. No. 894,366, Apr. 7, 1978, Pat. No. 4,195,174. This application Sep. 19, 1979, Ser. No. 77,012

The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.

Int. Cl.[3] A61K *35/14;* C07H *13/06*

U.S. Cl. 424—180 15 Claims

10. The process which comprises attaching 8-methoxycarbonyloctyl-3-O-(2-acetamido-2-deoxy-α-D-galactopyranosyl)-2-O-(α-L-fucopyranosyl)-β-D-galactopyranoside through an amide linkage of the carbonyl group of the 8-methoxycarbonyloctyl bridging arm to an insoluble aminated solid immunoabsorbent-type support to form an immunoabsorbent.

4,362,721

PENICILLANIC AND CEPHALOSPORANIC DERIVATIVES, PREPARATION THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Giorgio Ferrari, and Vittorio Vecchietti, both of Milan, Italy, assignors to Simes S.p.A., Italy

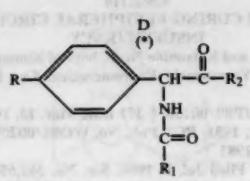
Continuation-in-part of Ser. No. 205,332, Nov. 10, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 327,058

Claims priority, application Italy, Nov. 9, 1979, 27147 A/79

Int. Cl.[3] A61K *31/70;* C07H *15/26*

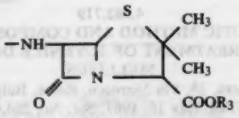
U.S. Cl. 424—180 29 Claims

1. A penicillanic and cephalosporanic derivative of the formula (I):

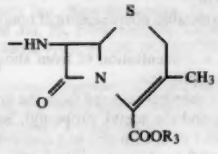


(I)

wherein R is H or —OH; R_1 is a hexose carbohydrate radical selected from the group consisting of 3-O-glucose, 6-O-galactose, 3-O-glucose acetals, 3-O-glucose ketals, 6-O-galactose acetals, and 6-O-galactose ketals, R_2 is a member selected from the group consisting of



and



and R_3 is H or an alkali or earth-alkaline metal.

4,362,722

SYNERGISTIC TICKICIDAL COMPOSITIONS CONTAINING ORGANOPHOSPHORUS COMPOUNDS AND CYCLOPROPANE CARBOXYLATES

Vincent K. Stubbs, Caboolture, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed May 12, 1980, Ser. No. 148,586

Claims priority, application Australia, May 11, 1979, PD8767

Int. Cl.³ A01N *57/12, 57/14, 57/16*

U.S. Cl. 424—219 **10 Claims**

1. A composition of matter comprising as a tickicidally effective active ingredient a mixture comprising as a first component a compound selected from the group consisting of (a) (±)-α-cyano-3-phenoxybenzyl (±)-cis/trans-3-(2-chloro-3,3,3-trifluoro-prop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate (CPC-I) and (b) (±)-α-cyano-3-phenoxybenzyl (±)-cis-3-(2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate (CPC-II); and as a second component at least one insecticidal organophosphorus compound selected from the group consisting of cis/trans 2-chloro-1-(2,4-dichlorophenyl)-vinyl diethyl phosphate, O-(4-bromo-2,5-dichlorophenyl) O,O-diethyl phosphorothioate (bromophos-ethyl), O,O-diethyl O-(3,5,6-trichloro-2-pyridyl) phosphorothioate, and O,O,O′,O′-tetraethyl-S,S′-methylene di(phosphorodithioate) (ethion), and wherein the weight ratio of the said first component to the said second component is in the range from 1:2 to 4:1 when the first component is CPC II and the second component is bromophos-ethyl or ethion and the said weight ratio is 1:2 for the remaining combinations.

4,362,723

S-ARYL S-(TERTIARY ALKYL) ALKYLPHOSPHONODITHIOATE INSECTICIDES AND NEMATOCIDES

Mohamed A. Fahmy, Princeton, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

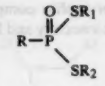
Filed Dec. 31, 1980, Ser. No. 221,643

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.³ A01N *57/022*; C07F *9/40*

U.S. Cl. 424—222 **16 Claims**

1. A method for controlling insects or nematodes which comprises applying thereto or to their habitat, in an amount pesticidal to said insects or nematodes, a compound of the formula



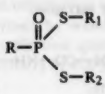
in which

R is alkyl of 1 to 8 carbon atoms, haloalkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, haloalkenyl of 2 to 8 carbon atoms, alkynyl of 2 to 8 carbon atoms or haloalkynyl of 2 to 8 carbon atoms;

R_1 is phenyl or phenyl substituted with 1 or more members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, Cl, Br, F, nitro, cyano, and trifluoromethyl; and

R_2 is tertiary alkyl of 4 to 8 carbon atoms.

7. A compound of the formula



in which

R is alkyl of 1 to 8 carbon atoms, haloalkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, haloalkenyl of 2 to 8 carbon atoms, alkynyl of 2 to 8 carbon atoms or haloalkynyl of 2 to 8 carbon atoms;

R_1 is phenyl or phenyl substituted with 1 or more members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, Cl, Br, F, nitro, cyano, and trifluoromethyl; and

R_2 is tertiary alkyl of 4 to 8 carbon atoms.

4,362,724

METHOD OF TREATING EDEMA AND HYPERTENSION AND PHARMACEUTICAL COMPOSITION THEREFOR IN WHICH THE ACTIVE INGREDIENT COMPRISES A NOVEL SUBSTITUTED PYRAZINYL-1,2,4-OXADIAZOLE AND A KALIURETIC DIURETIC

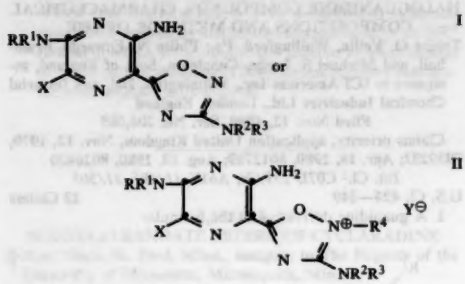
Mark G. Bock, Hatfield; Edward J. Cragoe, Jr., and Robert L. Smith, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 151,494, May 19, 1980, Pat. No. 4,309,540. This application Mar. 16, 1981, Ser. No. 244,509

Int. Cl.³ A61K *31/50*

U.S. Cl. 424—246 **6 Claims**

1. A pharmaceutical composition useful in the treatment of edema and hypertension which comprises a pharmaceutically acceptable carrier, a kaliuretic diuretic, and a compound of the formula:



wherein:

R_1 is hydrogen or methyl;
R^1 is hydrogen or methyl;
R^2 is hydrogen or methyl;
R^3 is hydrogen or methyl;
R^4 is methyl;
X is halo;
Y^- is chloride, bromide or iodide.

4,362,725

CEPHALOSPORINS

Bernd Wetzel; Eberhard Woitun, both of Biberach an der Riss; Wolfgang Reuter, Laupertshausen; Roland Maier, Biberach an der Riss; Uwe Lechner, Ummendorf, and Hanns Goeth, Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

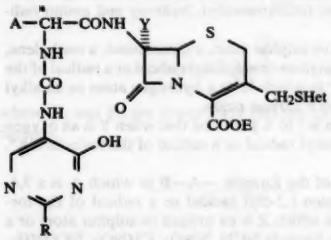
Filed Sep. 28, 1981, Ser. No. 305,953

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038501

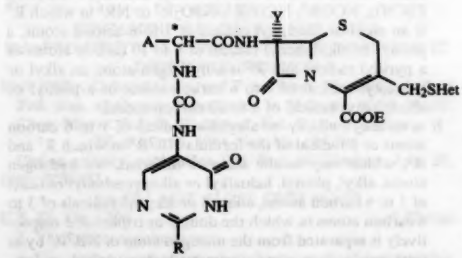
Int. Cl.³ A61K *31/545;* C07D *501/56*

U.S. Cl. 424—246 14 Claims

1. A compound of the tautomeric formulas



and

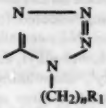


wherein

A is phenyl, 4-hydroxy-phenyl, 2-thienyl, 2-furyl or 3,4-dihydroxy-phenyl;

Y is hydrogen or methoxy;

Het is 4H-5,6-dioxo-1,2,4-triazin-3-yl, 4-methyl-5,6-dioxo-1,2,4-triazin-3-yl, 2-methyl-5,6-dioxo-1,2,4-triazin-3-yl, 1-vinyl-tetrazol-5-yl, 1-allyl-tetrazol-5-yl or



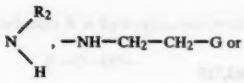
where

n is an integer from 1 to 3, inclusive,

R_1 is hydroxyl, amino, dimethylamino, acetylamino, aminocarbonyl, aminocarbonylamino, aminosulfonyl, aminosulfonylamino, methylcarbonyl, methylsulfonylamino, cyano, hydroxysulfonylamino, methylsulfonyl, methylsulfinyl, a carboxylic acid group or a sulfonic acid group, and

$-(CH_2)_n-R_1$ may also be alkyl of 2 to 4 carbon atoms or 2,3-dihydroxy-propyl;

R is cyclopropyl, 4'-hydroxycyclohexyl-amino,



where

R_2 is straight or branched, saturated or unsaturated hydrocarbyl of 1 to 4 carbon atoms or cycloalkyl of 3 to 6 carbon atoms;

G is hydroxyl, aminocarbonyl, aminosulfonyl, aminocarbonylamino, acetylamino, methylsulfonylamino, methylsulfinyl or methylsulfonyl;

m is 0 or 1; and

R_3 and R_4 are each hydrogen, chlorine, fluorine, hydroxyl, methoxy, acetylamino, aminocarbonylamino, nitro, acetyl, methylcarbonyloxy, methoxycarbonyl, aminocarbonyl, cyano, methylsulfinyl, methylsulfonyl, aminosulfonyl, methylaminosulfonyl or methyl; and

E is hydrogen or a protective group which is easily removable in vitro or in vivo;

or, when E is hydrogen, a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

13. An antibiotic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antibiotic amount of a compound of claim 1.

4,362,726

SUBSTITUTED-1,2,5-THIADIAZOLE-1-OXIDE COMPOUNDS, COMPOSITIONS AND USE

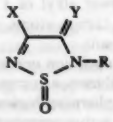
Joseph S. Amato, Brooklyn, N.Y.; Sandor Karady, Mountainside, and Leonard M. Weinstock, Belle Mead, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 24, 1981, Ser. No. 257,062

Int. Cl.³ C07D *413/04, 417/04;* A61K *31/425, 31/535*

U.S. Cl. 424—248.51 20 Claims

1. Compounds having the formula:



wherein:

(a) Y is either O or NH; and

(b) X is a 6-membered nitrogen containing heterocyclic ring which may also contain an oxygen or N—R″ heteroatom, said heterocyclic ring selected from morpholine, piperidine, piperazine and N-lower-alkyl piperazine, wherein R″ is hydrogen or lower-alkyl; and

(c) R is alkyl, benzyl, monohalogen-substituted-benzoyl, lower-alkyl-substituted anilino carbonyl, N-lower-alkyl carbamoyl, lower-alkoxy carbonyl, lower-alkylcarbonyl-lower-alkyl, phenylcarbonyllower-alkyl, monohalogen-substituted phenylcarbonyllower-alkyl and lower-alkoxy-carbonyllower-alkyl.

20. A method of inhibiting uncontrolled amounts of elastase in a patient which comprises administering an effective amount of a compound of claim 1.

4,362,727

5-SUBSTITUTED 9-CYANOMETHYLENE-DITHIENO[3,4-B:4,3-E]-AZEPINES AND THERAPEUTIC AGENTS WHICH CONTAIN THESE COMPOUNDS

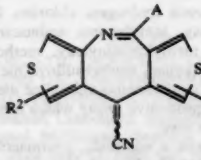
Gerd Steiner, Kirchheim; Hans-Juergen Teschendorf, Ludwigshafen; Horst Kreiskott, Wachenheim, and Hans P. Hofmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,940

Int. Cl.³ A61K *31/55*; C07D *495/14*

U.S. Cl. 424—248.51 **12 Claims**

1. A 5-substituted 9-cyanomethylene-dithieno[3,4-b:4′,3′-e]azepine of the formula I



I

where R^1 and R^2 are hydrogen or halogen, and A is $—NR^3R^4$, where R^3 and R^4, together with the nitrogen atom linking them, are a 5-membered to 7-membered saturated ring, which may contain nitrogen or oxygen as a further hetero-atom, an additional nitrogen present being unsubstituted or substituted by alkyl of 1 to 3 carbon atoms, hydroxyalkyl of 2 or 3 carbon atoms, alkoxyalkyl, where alkyl and alkoxy are of 1 to 3 carbon atoms, cycloalkyl or cycloalkylmethyl, where cycloalkyl is of 3 to 7 carbon atoms or alkynyl of 2 to 5 carbon atoms, and may additionally be substituted by oxygen in the form of an N-oxide, or A is $—NHR^5$, where R^5 is aminoalkyl of 2 to 7 carbon atoms, the amine nitrogen being unsubstituted or substituted by lower alkyl of 1 to 5 carbon atoms or being a constituent of a 5-membered to 7-membered saturated ring, which may contain nitrogen or oxygen as a further hetero-atom, a nitrogen present being substituted by lower alkyl of 1 to 3 carbon atoms or hydroxyalkyl of 2 or 3 carbon atoms, and its physiologically tolerated acid addition salts.

12. A therapeutic composition contains, in addition to conventional carriers and diluents, a compound of the formula I as claimed in claim 1, or a pharmacologically tolerated acid addition salt thereof, as the active compound.

4,362,728

HALOGUANIDINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Tobias O. Yellin, Wallingford, Pa.; Philip N. Edwards, Bramhall, and Michael S. Large, Congleton, both of England, assignors to ICI Americas Inc., Wilmington, Del. and Imperial Chemical Industries Ltd., London, England

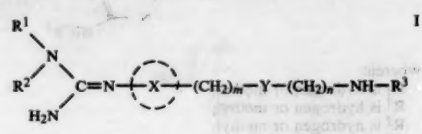
Filed Nov. 12, 1980, Ser. No. 206,005

Claims priority, application United Kingdom, Nov. 13, 1979, 7939232; Apr. 18, 1980, 8012789; Aug. 13, 1980, 8026420

Int. Cl.³ C07D *239/24*; A61K *31/495*, *31/505*

U.S. Cl. 424—249 **12 Claims**

1. A guanidine derivative of the formula:



I

in which

R^1 and R^2, which may be the same or different, are hydrogen atoms or branched or unbranched alkyl radicals of 1 to 10 carbon atoms, cycloalkyl radicals of 3 to 8 carbon atoms or cycloalkylalkyl radicals in which the alkyl part is of 1 to 6 carbon atoms and the cycloalkyl part is of 3 to 8 carbon atoms, each of the alkyl, cycloalkyl and cycloalkylalkyl radicals being optionally substituted by one or more halogen atoms selected from fluorine, chlorine and bromine atoms, provided that at least one of R^1 and R^2 is a halogen substituted alkyl, cycloalkyl or cycloalkylalkyl radical and provided that there is no halogen substituent on the carbon atom of the alkyl, cycloalkyl or cycloalkylalkyl radical which is directly attached to the nitrogen atom;

ring X is a pyridine, pyrimidine, pyrazine, pyridazine or triazine ring which may, where possible, carry a single optional substituent, the optional substituents on ring X being selected from fluorine, chlorine, bromine and iodine atoms and alkyl, alkoxy and alkylthio radicals of 1 to 6 carbon atoms, trifluoromethyl, hydroxy and amino radicals;

Y is an oxygen or sulphur atom, a direct bond, a methylene, cis or trans vinylene or sulphinyl radical or a radical of the formula NR^4 in which R^4 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms;

m is 0 to 4 and n is 1 to 5, provided that when Y is an oxygen atom, a sulphinyl radical or a radical of the formula NR^4, n is 2 to 5;

R^3 is a radical of the formula —A—B in which A is a 3,4-dioxocyclobuten-1,2-diyl radical or a radical of the formula C═Z in which Z is an oxygen or sulphur atom or a radical of the formula NCN, NNO_2, $CHNO_2$, $NCONH_2$, $C(CN)_2$, $NCOR^5$, NCO_2R^5, NSO_2R^5 or NR^6 in which R^5 is an alkyl or haloalkyl radical of 1 to 6 carbon atoms, a phenyl or alkylphenyl radical of 6 to 10 carbon atoms or a pyridyl radical and R^6 is a hydrogen atom, an alkyl or haloalkyl radical of 1 to 6 carbon atoms or a phenyl or alkylphenyl radical of 6 to 10 carbon atoms;

B is an alkyl, alkoxy or alkylthio radical of 1 to 6 carbon atoms or a radical of the formula NR^7R^8 in which R^7 and R^8, which may be the same or different, are hydrogen atoms, alkyl, phenyl, haloalkyl or alkoxycarbonyl radicals of 1 to 6 carbon atoms, alkenyl or alkynyl radicals of 3 to 6 carbon atoms in which the double or triple bond respectively is separated from the nitrogen atom of NR^7R^8 by at least one carbon atom, (primary hydroxy)alkyl or (primary amino)alkyl radicals of 2 to 6 carbon atoms, alkylaminoalkyl or dialkylaminoalkyl radicals of up to 8 carbon atoms in which the nitrogen atom is separated from the nitrogen atom of NR^7R^8 by at least two carbon atoms or cycloalkyl radicals of 3 to 8 carbon atoms, or R^7 and R^8

are joined to form, together with the nitrogen atom to which they are attached, a 5- or 6-membered saturated ring which optionally contains an oxygen atom or an NR^9 radical in which R^9 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms; and the pharmaceutically-acceptable acid-addition salts thereof.

4,362,729

ALKOXYALKANOATE ESTERS OF CYCLARADINE

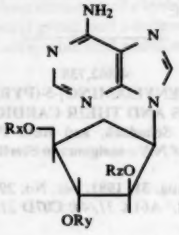
Robert Vince, St. Paul, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jun. 23, 1980, Ser. No. 162,097

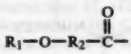
Int. Cl.³ C07D *239/70;* A61K *31/52*

U.S. Cl. 424—253 **12 Claims**

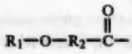
1. An antiviral alkoxyalkanoate ester of cyclaradine:



wherein Rx, Ry and Rz are



or hydrogen and at least one of Rx, Ry and Rz is



where R_1 and R_2 are lower alkyl radicals having from 1 to 6 carbons.

4,362,730

VINCAMINE SACCHARINATE AND A PHARMACEUTICAL COMPOSITION CONTAINING IT DISSOLVED THEREIN

Kurt Räder, Ochsenhausen, and Peter Stoss, Illertissen, both of Fed. Rep. of Germany, assignors to Heinrich Mack Nachf. Chem-Pharm. Fabrik, Illertissen, Fed. Rep. of Germany

Filed Jul. 16, 1981, Ser. No. 283,706

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1980, 3031953

Int. Cl.³ A61K *31/435;* C07D *461/00*

U.S. Cl. 424—256 **4 Claims**

1. Vincamine saccharinate.

2. Vincamine saccharinate in a pharmaceutically acceptable carrier or diluent.

3. A pharmaceutical composition comprising 0.5 to 3% (w/w) of vincamine saccharinate dissolved in a solvent consisting of from 10 to 90 parts by weight of glycerol and from 90 to 10 parts by weight of anhydrous ethanol.

4,362,731

MYOTONOLYTIC USE OF 4,5,6,7-TETRAHYDROISOXAZOLO [5,4-C] PYRIDIN-3-OL AND DERIVATIVES THEREOF

Ronald C. Hill, Muttenz, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

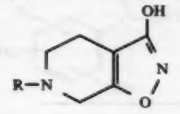
Filed Aug. 26, 1981, Ser. No. 296,327

Claims priority, application United Kingdom, Sep. 1, 1980, 8028199

Int. Cl.³ A61K *31/44, 31/435*

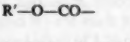
U.S. Cl. 424—256 **8 Claims**

1. A method of treating myotonic conditions in a subject in need of such treatment, which method comprises administering to said subject a myotonolytically effective amount of a compound of formula I



I

wherein R is hydrogen, acetyl or a group of formula II



II

wherein R′ is alkyl(C_{1-8}); phenyl; phenyl substituted in the 4-position with halogen, alkoxy (C_{1-4}) or alkyl(C_{1-4}); phenylalkyl; or phenylalkyl in which the phenyl group is substituted in the 4-position with halogen, alkoxy(C_{1-4}) or alkyl(C_{1-4}).

4,362,732

DIAZEPINE DERIVATIVES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

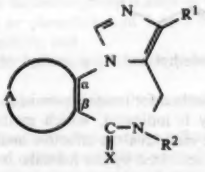
Filed Feb. 18, 1982, Ser. No. 349,749

Claims priority, application Switzerland, Feb. 27, 1981, 1342/81

Int. Cl.³ A61K *31/55;* C07D *471/14*

U.S. Cl. 424—256 **12 Claims**

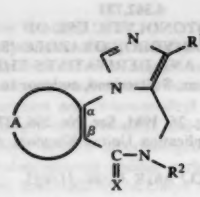
1. A compound of the formula



I

wherein A together with the two carbon atoms denoted as α and β is a pyridine ring, X is an oxygen or sulphur atom, R^1 is hydrogen, halogen, lower alkyl, lower alkoxymethyl or a group of the formula —$COOR^3$ and R^2 and R^3 each are lower alkyl, and pharmaceutically acceptable acid addition salts thereof.

11. A method of antagonizing, in a patient, the central-depressant, muscle relaxant, ataxic, blood pressure lowering and respiratory-depressant properties of 1,4-benzodiazepines which have tranquillizing activity which comprises daily administration to said patient of from about 0.2 mg to about 500 mg of a compound of the formula



I

wherein A together with the two carbon atoms denoted as α and β signifies a pyridine ring, X signifies an oxygen or sulphur atom, R^1 signifies hydrogen, halogen, lower alkyl, lower alkoxymethyl or the group —$COOR^3$ and R^2 and R^3 each signify lower alkyl and the pharmaceutically acceptable acid additional salts thereof.

4,362,733

N-CYCLOPROPYLMETHYL-14-ETHOXYMORPHINAN-6-ONE COMPOUNDS EXHIBITING MIXED ANALGESIC/NARCOTIC ANTAGONIST ACTIVITY AND PRECURSORS THEREFORE

Anil C. Ghosh, Lexington, and Raj K. Razdan, Belmont, both of Mass., assignors to Miles Laboratories, Inc., Elkhart, Ind.

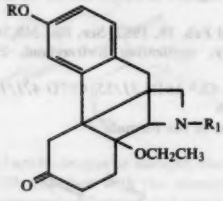
Filed Jun. 29, 1981, Ser. No. 278,759

The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.

Int. Cl.³ A61K *31/485;* C07D *221/28*

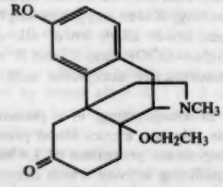
U.S. Cl. 424—260 **10 Claims**

1. 14-ethoxy substituted-3-hydroxy or 3-methoxy-6-one morphinans characterized by the formula:



wherein R is H or methyl and R_1 is methyl or cyclopropylmethyl.

7. A therapeutic method for treating pain in an individual for whom such therapy is indicated, which method comprises administering to the individual an effective analgesic amount of a compound characterized by the formula:



where R is H or methyl.

4,362,734

2-(SUBSTITUTED-AMINO)-5-(PYRIDINYL-NICOTINONITRILES, AND THEIR CARDIOTONIC USE

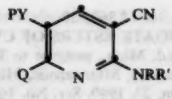
George Y. Lesher; Chester J. Opalka, Jr., both of Schodack, and Donald F. Page, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 26, 1981, Ser. No. 296,300

Int. Cl.³ A61K *31/455, 31/44;* C07D *213/85*

U.S. Cl. 424—263 **12 Claims**

1. A 2-RR'N-5-PY-6-Q-nicotinonitrile having the formula



where R is methyl or ethyl, R' is hydrogen or methyl, PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, and Q is hydrogen or methyl, the latter only when R' is hydrogen, or pharmaceutically acceptable acid-addition salt thereof.

4,362,735

3-[(3-OXO-1-BUTENYL)AMINO]-5-(PYRIDINYL)-2(1H)-PYRIDINONES AND THEIR CARDIOTONIC USE

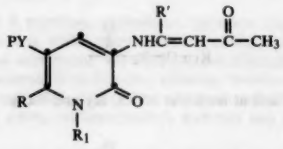
George Y. Lesher, Schodack, and Ruth P. Brundage, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,828

Int. Cl.³ A61K *31/44;* C07D *213/74*

U.S. Cl. 424—263 **11 Claims**

1. A compound having the formula



or acid-addition salt thereof, where R' is hydrogen or methyl, R_1 and R are each hydrogen or lower-alkyl, PY is 4-pyridinyl or 3-pyridinyl, or 4-pyridinyl or 3-pyridinyl having one or two lower-alkyl substituents.

4,362,736

GUANIDINOTHIAZOLE COMPOUNDS, AND MEDICAL COMPOSITIONS CONTAINING THEM

Yasufumi Hirata, Omiya; Isao Yanagisawa, Tokyo; Yoshio Ishii, Omiya, and Masaaki Takeda, Urawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

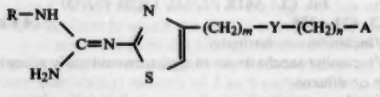
Filed Mar. 6, 1980, Ser. No. 127,902

Claims priority, application Japan, Mar. 6, 1979, 54-25745; Jun. 23, 1979, 54-79508

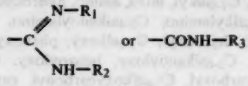
Int. Cl.³ C07D *277/20;* A61K *31/425*

U.S. Cl. 424—270 **9 Claims**

1. A guanidinothiazole compound of the formula



wherein R represents a hydrogen atom or a lower alkyl group, Y represents a sulfur atom or a methylene group, m and n each represent an integer of 1–3, A represents the group



wherein R_1 represents a member selected from the group consisting of a hydrogen atom, a cyano group, a carbamoyl group, a ureido group, a hydroxyl group, a lower alkoxy group, a lower alkylcarbonyl group of a straight or branched carbon chain having 1–5 carbon atoms, a lower alkylcarbonylamino group of straight or branched carbon chain having 1–5 carbon atoms, a benzoylamino group, a naphthoylamino group, a —NH—SO_2-phenyl group, a —NH—SO_2-naphthyl group, a benzyl group, a phenethyl group, and a carboxymethyl group, R_2 represents a member selected from the group consisting of a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a cyano group, and a lower alkylcarbonyl group of a straight or branched carbon chain having 1–5 carbon atoms, and R_3 represents a member selected from the group consisting of a hydrogen atom, a lower alkyl group, a hydroxyl group, and a sulfamoyl group, and the pharmacologically acceptable acid addition salts thereof.

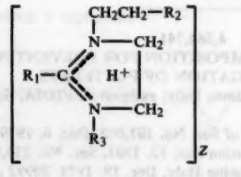
4,362,737

TRANSDERMAL CARRIER MATERIALS

Rolf Schäfer, Grabenmattstrasse 37, 4133 Pratteln BL; Werner Schäfer, Auf der Wacht 33, 4104 Oberwil BL, and Doris Schäfer, Neue Blauenrainstrasse 9, 4411 Arisdorf BL, all of Switzerland

Filed Apr. 13, 1981, Ser. No. 253,876
Int. Cl.³ A61K *31/415*; C07D *233/18*
U.S. Cl. 424—273 R **11 Claims**

1. An amphoteric-dissociating complex having
(a) a cationic radical having the formula:



wherein:
R_1 is an aliphatic alkyl group having 6 to 22 carbons,
R_2 is a member of the group consisting of $—R_4—(CH_2CH_2)—COOH$, $—R_4—(CH{=}CH)COOH$ and $—O—PO_3H_2$, wherein R_4 is —NH—, —NH—CO—, or —O—CO—, and
R_3 is hydrogen, $—CH_2—COOH$ or $—CH_2—CH_2—COOH$; and
(b) an anionic group having the formula $—OOC—CH_2—(O—CH_2—CH_2)_x—OC_nH_{2n+1}$

wherein:
n is 8 to 22 and x is 1 to 10; and Z is 1.

2. An aqueous based pharmaceutical or cosmetic composition comprising a complex of claim 1 and an active ingredient.

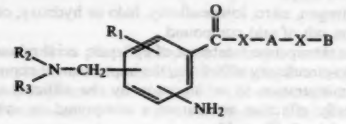
4,362,738

ESTERS AND AMIDES CONTAINING THE 1-(4-CHLOROBENZOYL)-5-METHOXY-2-METHYL-1H-INDOLE-3-ACETYL MOIETY

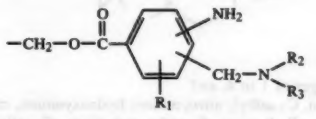
Johannes Keck; Gerd Krüger; Helmut Pieper, all of Biberach; Klaus Noll, Warthausen; Günther Engelhardt; Norbert Promberger, both of Biberach, and Rainer Zimmermann, Mittelbiberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,587
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926472
Int. Cl.³ C07D *279/18*; A61K *27/00*
U.S. Cl. 424—274 **7 Claims**

1. A compound of the formula



wherein each X, which may be identical to or different from the other X, is oxygen or imino;
R_1 is hydrogen, fluorine, chlorine or bromine;
R_2 and R_3 are each hydrogen; unsubstituted or monosubstituted alkyl of 1 to 6 carbon atoms, where the substituent is phenyl or dialkylamino with 1 to 3 carbon atoms in each alkyl moiety; or cycloalkyl of 5 to 7 carbon atoms;
A is cycloalkylene of 5 to 7 carbon atoms; unsubstituted or substituted alkylene of 2 to 10 carbon atoms, where the substituents are one to two alkyls of 1 to 3 carbon atoms each, one to two carbalkoxys of 2 to 4 carbon atoms each, one to two phenyls, one to four hydroxyls, one halomethyl, one hydroxymethyl, one alkanoyloxy of 1 to 18 carbon atoms, one alkanoyloxymethyl of 1 to 18 carbon atoms in the alkanoyl moiety or one



where R_1, R_2 and R_3 have the meanings previously defined; or alkylene of 2 to 10 carbon atoms interrupted by oxygen, sulfur, sulfoxide, sulfonyl, phenyl, cyclohexyl, or unsubstituted or substituted imino, where the substituent on the imino group is alkyl of 1 to 6 carbon atoms, phenyl or phenylalkyl of 1 to 3 carbon atoms in the alkyl moiety; and
B is 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-1H-indole-3-acetyl;
or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of counteracting inflammation in a warm-blooded animal, which comprises perorally, parenterally, rectally or topically administering to said animal an effective anti-inflammatory amount of a compound of claim 1.

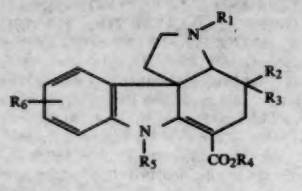
4,362,739

PYRROLO(2,3-d)CARBAZOLE DERIVATIVES, COMPOSITIONS AND USE

Martin E. Kuehne, Burlington, Vt., assignor to S.A. Omnichem, Louvain-la-Neuve, Belgium

Filed May 4, 1981, Ser. No. 260,415
Int. Cl.³ C07D *487/10*; A61K *31/40*
U.S. Cl. 424—274 **19 Claims**

1. A compound of the formula



wherein

R_1 and R_5 each represents hydrogen, lower alkyl, or benzyl;

R_2 and R_3 each represents hydrogen or lower alkyl or, together, lower alkylene;

R_4 is lower alkyl;

R_6 is hydrogen, nitro, lower alkoxy, halo or hydroxy; or an addition salt of said compound.

18. In the therapeutic treatment of epileptic, cerebralvascular or cardio-circulatory afflictions, the improvement comprising the administration to or ingestion by the afflicted of a therapeutically effective amount of a compound or salt as claimed in claim **1–12**, or **13**.

4,362,740

SPIRO COMPOUNDS, THEIR PRODUCTION AND USE

Isuke Imada; Hirosada Sugihara, both of Osaka, and Mitsuru Kawada, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

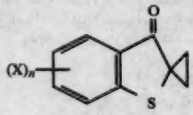
Filed Sep. 19, 1980, Ser. No. 188,834

Claims priority, application Japan, Sep. 25, 1979, 54/123433

Int. Cl.³ A61K *31/38;* **C07D** *333/64*

U.S. Cl. 424—275 **12 Claims**

1. A compound of the formula:



wherein

n is an integer of 1 to 4, and

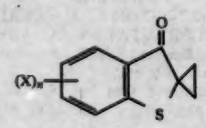
X is halogen, C_{1-6}alkyl, nitro, amino, hydroxyamino, mono- or di-C_{1-4}alkylamino, C_{2-4}alkanoylamino, C_{1-4}alkylsulfonylamino, hydroxyl, C_{1-6}alkoxy, phenoxy, phenyl-C_{1-4}alkyloxy, C_{2-6}alkanoyloxy, benzoyloxy, C_{2-6}alkanoyl, benzoyl, carboxyl, C_{2-6}alkoxycarbonyl, carbamoyl, C_{1-4}alkylcarbamoyl, sulfamoyl, C_{1-4}alkylsulfamoyl, piperidinosulfonyl, morpholinosulfonyl, C_{1-4}alkylthio or C_{1-4}alkylsulfonyl,

said C_{1-6}alkoxy being unsubstituted or substituted by carboxyl, C_{2-6}alkoxycarbonyl or carbamoyl which is unsubstituted or substituted by C_{1-4}alkyl and/or C_{5-6}cycloalkyl, or

two of X at the 5- and 6-positions together form —CH=CH—CH=CH—,

or a pharmaceutically acceptable salt thereof.

9. A pharmaceutical composition suitable for the prophylaxis or treatment of thrombosis, which comprises as an active ingredient an antithrombotically effective amount of a compound of the formula:



wherein

n is an integer of 1 to 4, and

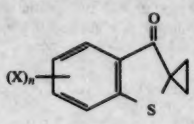
X is halogen, C_{1-6}alkyl, nitro, amino, hydroxyamino, mono- or di-C_{1-4}alkylamino, C_{2-4}alkanoylamino, C_{1-4}alkylsulfonylamino, hydroxyl, C_{1-6}alkoxy, phenoxy, phenyl-C_{1-4}alkyloxy, C_{2-6}alkanoyloxy, benzoyloxy, C_{2-6}alkanoyl, benzoyl, carboxyl, C_{2-6}alkoxycarbonyl, carbamoyl, C_{1-4}alkylcarbamoyl, sulfamoyl, C_{1-4}alkylsulfamoyl, piperidinosulfonyl, morpholinosulfonyl, C_{1-4}alkylthio or C_{1-4}alkylsulfonyl,

said C_{1-6}alkoxy being unsubstituted or substituted by carboxyl, C_{2-6}alkoxycarbonyl or carbamoyl which is unsubstituted or substituted by C_{1-4}alkyl and/or C_{5-6}cycloalkyl, or

two of X at the 5- and 6-positions together form —CH=CH—CH=CH—,

or a pharmaceutically acceptable salt thereof.

10. A method for the prophylaxis or treatment of thrombosis in a mammal which comprises administering to said mammal an antithrombotically effective amount of a compound of the formula:



wherein

n is an integer of 1 to 4, and

X is halogen, C_{1-6}alkyl, nitro, amino, hydroxyamino, mono- or di-C_{1-4}alkylamino, C_{2-4}alkanoylamino, C_{1-4}alkylsulfonylamino, hydroxyl, C_{1-6}alkoxy, phenoxy, phenyl-C_{1-4}alkyloxy, C_{2-6}alkanoyloxy, benzoyloxy, C_{2-6}alkanoyl, benzoyl, carboxyl, C_{2-6}alkoxycarbonyl, carbamoyl, C_{1-4}alkylcarbamoyl, sulfamoyl, C_{1-4}alkylsulfamoyl, piperidinosulfonyl, morpholinosulfonyl, C_{1-4}alkylthio or C_{1-4}alkylsulfonyl,

said C_{1-6}alkoxy being unsubstituted or substituted by carboxyl, C_{2-6}alkoxycarbonyl or carbamoyl which is unsubstituted or substituted by C_{1-4}alkyl and/or C_{5-6}cycloalkyl, or

two of X at the 5- and 6-positions together form —CH=CH—CH=CH—,

or a pharmaceutically acceptable salt thereof.

4,362,741

THERAPEUTIC COMPOSITION FOR PREVENTING THE AGGREGATION OF PLATELETS

Francesco della Valle, Padua, Italy, assignor to FIDIA, S.p.A., Padua, Italy

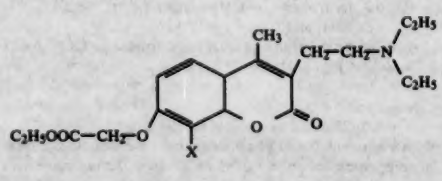
Continuation-in-part of Ser. No. 101,005, Dec. 6, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,452

Claims priority, application Italy, Dec. 19, 1978, 30992 A/78

Int. Cl.³ A61K *31/37*

U.S. Cl. 424—281 **6 Claims**

1. A method for preventing the aggregation of platelets in mammals which comprise administering thereto an effective platelets anti-aggregative amount of a compound having the formula:



wherein X is chlorine or bromine, or a pharmaceutically acceptable salt thereof.

4,362,742

METHOD FOR TREATING SKIN DISORDERS

Thomas J. Sullivan, 25 Old Gate Rd., Thrussington, Leicestershire, England

Continuation of Ser. No. 530,853, Dec. 9, 1974, Pat. No. 4,271,182. This application Apr. 6, 1981, Ser. No. 251,177

Claims priority, application United Kingdom, Dec. 19, 1973, 58986/73

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.[3] A61K *31/35*

U.S. Cl. 424—283 1 Claim

1. A method for treating drug eruptions, psoriasis, dermatitis herpetiformis, pemphigus or chronic skin ulcers in man which comprises externally applying a therapeutically effective amount of the compound, 1,3-bis(2-carboxychromon-5-yloxy)-2-hydroxypropane or a pharmaceutically acceptable salt, ester or amide thereof to afflicted areas of the skin.

4,362,743

ANTIBACTERIAL MONIC ACID ESTERS

Norman H. Rogers, Horsham; Peter J. O'Hanlon, Redhill, and Graham Walker, Guildford, all of England, assignors to Beecham Group Limited, England

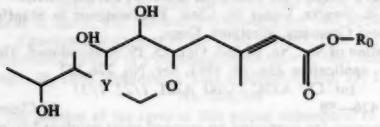
Filed Jul. 31, 1981, Ser. No. 289,103

Claims priority, application United Kingdom, Aug. 2, 1980, 8025400

Int. Cl.[3] A61K *31/35;* C07D *309/06*

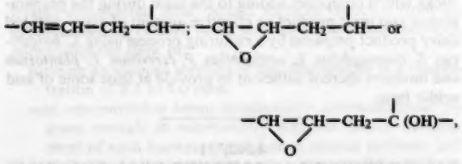
U.S. Cl. 424—283 7 Claims

1. A compound of formula (II)



(II)

in which Y represents



and R_0 represents $C_{2\text{-}20}$ alkyl, $C_{3\text{-}8}$ cycloalkyl, $C_{4\text{-}20}$ alkenyl, phenylalkyl, cycloalkylalkyl, heterocyclyl or heterocyclylalkyl wherein said heterocyclyl is a five or six-membered heterocyclic ring containing oxygen, sulfur or nitrogen as the sole heteroatom, said heterocyclic ring being unsubstituted or substituted by lower alkyl, which is substituted by a hydroxyimino-, hydrazono- or semicarbazono group.

6. A method for treating humans or animals which comprises administering an antibacterially or antimycoplasmally effective non-toxic amount of a compound of formula (II) as defined in claim 1 to a human or animal suffering from a bacterial or mycoplasmal infection.

4,362,744

TRANS-3-SUBSTITUTED-1-INDANOL INSECTICIDAL ESTER DERIVATIVES

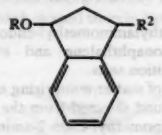
Ernest L. Plummer, North Tonawanda, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 19, 1981, Ser. No. 245,484

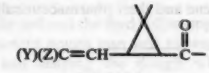
Int. Cl.[3] C07C *69/743, 69/747;* A01N *53/00*

U.S. Cl. 424—305 18 Claims

1. A 3-substituted-1-indanyl ester of the formula



wherein R^2 is phenylmethyl which may be substituted on the phenyl ring with lower alkyl or halogen; R is 2,2,3,3-tetramethylcyclopropanecarbonyl, 1-(4-chlorophenyl)-2-methylpropyl-1-carbonyl, 1-(4-ethoxyphenyl)-2,2-dichlorocyclopropanecarbonyl, or an ethenylcyclopropanecarbonyl group of the formula



wherein Y and Z, the same or different, are hydrogen, halogen, lower alkyl, perhaloalkyl, phenyl which may be substituted with halogen or lower alkyl, or phenylthio which may be substituted with halogen or lower alkyl, with the proviso that one of Y and Z is other than hydrogen; and, with respect to the substituents on the indanyl moiety, the 1,3-trans isomer is present in an isomeric excess over the 1,3-cis isomer of at least 50%.

4,362,745

MEDICAL PROCESS AND PREPARATION

Frederick B. Johnston, 10901 Carrollwood Dr., Tampa, Fla. 33618

Continuation-in-part of Ser. No. 208,286, Nov. 19, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 324,106

Int. Cl.[3] A61K *31/195*

U.S. Cl. 424—319 12 Claims

1. A method of reducing tissue trauma, neuro-muscular spasms, and musculo-skeletal disorders in an animal, by administering to said animal an effective amount of a compound which comprises one or more N-monoalkyl and/or N-N, dialkyl derivatives of the following amino acids:

aspartic acid;
glutamic acid;
hydroxyglutamic acid;
alpha amino adipic acid;
serine;
threonine;
physiologically acceptable salt or salts of the above.

4,362,746

ANTIVIRAL 1,2,3,4-TETRAHYDRO-1,4-METHANONAPHTHALENE DERIVATIVES

Kekhusroo R. Bharucha, Toronto; Kam C. Tin, Etobicoke; Iva Ajdukovic, and Djordje Ajdukovic, both of Beaconsfield, all of Canada, assignors to Canada Packers Inc., Ontario and The Institute of Microbiology and Hygiene of the University of Montreal, Quebec, both of, Canada

Filed Jan. 21, 1981, Ser. No. 226,640

Int. Cl.³ A61K *31/135;* **C07C** *87/453*

U.S. Cl. 424—330 **8 Claims**

1. Endo-3-dimethylaminomethyl-endo-2-amino-1,2,3,4-tetrahydro-1,4-methanonaphthalene and its pharmaceutically acceptable acid addition salts.

5. A composition of matter comprising an anti-viral effective amount of a compound selected from the group consisting of endo-3-dimethylaminomethyl-endo-2-amino-1,2,3,4-tetrahydro-1,4-methanonaphthalene, endo-2-dimethylaminomethyl-1,2,3,4-tetrahydro-1,4-methanonaphthalene and their pharmaceutically acceptable acid addition and a pharmaceutically acceptable carrier.

8. A method for treating viral infections in a patient comprising administering to the patient an effective daily dose of a compound selected from the group consisting of endo-3-dimethylaminomethyl-endo-2-amino-1,2,3,4-methanonaphthalene, endo-2-dimethylaminomethyl-1,2,3,4-tetrahydro-1,4-methanonaphthalene and their pharmaceutically effective acid addition salts.

4,362,747

COSMETIC CREAM PACK FORMULATION

Lawrence J. Coursen, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,654

Int. Cl.³ A61K *47/00*

U.S. Cl. 424—358 **1 Claim**

1. A cosmetic cream pack formulation consisting essentially of, in percent by weight:

Ingredients	Percent
Propylene glycol	2.90
polyoxyethylene (20) sorbitan monopalmitate	4.00
glyoxyldiureide	0.50
85% mineral oil/15% lanolin alcohol	5.00
white beeswax	3.00
sorbitan monopalmitate	4.00
polyoxyethylene (5) C-16/18 alcohol	6.00
dimethicone copolyol	1.00
glyceryl monostearate/polyoxyethylene (100) stearate	3.00
zinc oxide	6.00
corn starch	10.00
preservative	q.s.
deionized water	q.s. to 100%

4,362,748

METHOD FOR FORMING SHAPED PRODUCTS FOR HUMAN AND/OR ANIMAL CONSUMPTION OR AS MARINE BAIT AND PRODUCTS PRODUCED THEREBY

James P. Cox, Lynden, Wash., assignor to Loyal Wells, Thiensville, Wis. and Cox Family Laboratories, Inc., a part interest

Filed Oct. 3, 1980, Ser. No. 193,434

Int. Cl.³ A23L *1/04;* **A23K** *1/18*

U.S. Cl. 426—1 **38 Claims**

1. The method of forming a shaped edible product comprising the steps of:

(a) forming a first aqueous solution including at least water and algin;

(b) forming a second aqueous solution including at least water and a metal salt dissolved therein;

(c) introducing a sterilant into one of the first and second aqueous solutions;

(d) introducing a sterilant neutralizing agent into the other of the first and second aqueous solutions; and,

(e) depositing a discrete quantity of the first solution into the second solution whereupon

(i) the interaction between the algin in the first solution and the metal ions released by the metal salt in the second solution serves to set the constituent ingredients of the first solution in the particular shape occupied thereby upon introduction into the second solution,

(ii) the sterilant serves to sterilize the constituent ingredients of the product thus formed,

and (iii) the neutralizing agent serves to slowly neutralize the sterilant.

4,362,749

SPREADABLE CHEESE HAVING CHARACTERISTICS OF CRESCENZA CHEESE

Tomaso Sozzi, Lausanne, Switzerland, assignor to Societe D'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Apr. 3, 1981, Ser. No. 250,561

Claims priority, application Switzerland, Apr. 25, 1980, 3192/80

Int. Cl.³ A23C *19/02*

U.S. Cl. 426—36 **7 Claims**

1. A process for the production of a spreadable cheese having substantially all the traditional characteristics of crescenza cheese, which comprises forming a curd from milk by coagulation with lactic acid at a pH-value of from 5 to 5.3, draining the curd to a dry matter content of from 30 to 50%, thereafter adding salt to the drained curd in an amount from 0.5 to 1% of the total weight of the drained curd and allowing the salted curd to ripen until it is complete.

4,362,750

PRODUCTION OF FERMENTED TYPE SAUSAGE

William E. Swartz, Upper St. Clair, Pa., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 88,244, Oct. 25, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,262

Int. Cl.³ A22C *11/00;* **A23L** *1/22, 1/31*

U.S. Cl. 426—59 **16 Claims**

1. A process for preparing an encased meat product having an acidic taste selected from the group consisting of fermented sausage, dry sausage, semi-dry sausage, fresh sausage, cooked sausage, brown and serve sausage, luncheon loaf and meat sticks which comprises adding to the meat during the preparation of said meat product an effective amount of a dry cultured dairy product prepared by a culturing process using *L. bulgaricus, S. thermophilus, L. acidophilus, P. cerevisiae, L. plantarum* and mixtures thereof sufficient to provide at least some of said acidic taste.

4,362,751

PASTRY PRODUCT AND METHOD OF MAKING SAME

Amilcare Dogliotti, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy

Division of Ser. No. 820,184, Jul. 29, 1977, Pat. No. 4,159,348. This application Sep. 27, 1978, Ser. No. 946,275

Claims priority, application Italy, Aug. 17, 1976, 69028 A/76; Jun. 7, 1977, 68308 A/77

The portion of the term of this patent subsequent to Jun. 26, 1996, has been disclaimed.

Int. Cl.³ A21D *13/08*

U.S. Cl. 426—94 **12 Claims**

1. A pastry product of pocket size preservable in a sealed package for extended periods of time without degradation in consistency and taste comprising:

(a) a portion of baked sweet bread impregnated with a spirituous sugar-containing liqueur in a proportion of at least 1 part by weight liqueur to 1 part by weight bread;
(b) a coating of chocolate completely enveloping said portion of bread;
(c) the said liqueur providing at least 35 ml ethyl alcohol and at least 25 grams sugar in each 100 grams bread;
(d) said chocolate containing at least 30 wt.% of edible fat;
(e) the said bread having prevailingly a cellular structure in which the total area of the eventual apertures through which a cell communicates with its adjacent cells does not exceed 30% of the total internal area of the cell.

4,362,752

SIMULATED SHRIMP MEAT AND PROCESS FOR PREPARING SAME

Yoshito Sugino, and Norihiko Yamamoto, both c/o Sugiyo Co., Ltd. 27, Ingai, Fuchu-machi, Nanao, Ishikawa, Japan

Filed Apr. 7, 1981, Ser. No. 251,889
Claims priority, application Japan, Apr. 7, 1980, 55-46087; Apr. 19, 1980, 55-51939
Int. Cl.³ A23J *3/00*; A23L *1/04, 1/325*
U.S. Cl. 426—104 **18 Claims**

14. A process for preparing an edible product simulating the meat of shrimp, prawn or lobster comprising the steps of:
(a) preparing a fish meat paste;
(b) preparing an edible fibrous material having an average size of less than about 0.5 mm in diameter, said fibrous material having a three-dimensional reticulate structure and selected from the group consisting of polysaccharides, vegetable proteins and vegetable fibrous material;
(c) admixing 1 part by weight of said fish meat paste with from 0.4 to 2.0 parts by weight of said fibrous material;
(d) kneading said mixture;
(e) shaping said kneaded mixture into pieces of predetermined size and shape; and
(f) coagulating said pieces by heat application thereto.

4,362,753

MEAT CARCASS SANITIZING PROCESS

Kent S. Barta, 801 Monroe, Jefferson City, Mo. 65101

Continuation-in-part of Ser. No. 199,195, Oct. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 144,030, Apr. 28, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,695
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.³ A23B *4/08*
U.S. Cl. 426—332 **3 Claims**

1. The process of avoiding proliferation of bacteria on freshly slaughtered meat carcass surfaces, selected from the group consisting of beef, pork, lamb and veal carcass surfaces, comprising the steps of:
forming an aqueous solution of chlorine dioxide in a concentration of 0.5 to 4.0 ppm,
said concentration being substantially sub-bactericidal yet great enough to substantially suppress bloom development of such bacteria on said meat carcass surfaces, and
applying said solution to said meat carcass surfaces by intermittent spraying during chilling.

4,362,754

METHOD OF FORMING SHAPED POTATO PRODUCTS

David R. Wenger, Grand Rapids, and Kenneth R. Walsh, Saranac, both of Mich., assignors to Werner Lehara, Inc., Grand Rapids, Mich.

Division of Ser. No. 75,757, Sep. 14, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,972
Int. Cl.³ A21D *6/00*
U.S. Cl. 426—503 **4 Claims**

1. A method of forming mutually segregated elongated narrow strips of food product from a potato dough, comprising the steps of:
supplying a flowable potato dough material, including potatoes and a binder mixed together, into a nip area defined by a die roll and a feed roll, the die roll defining a plurality of generally parallel laterally adjacent annularly-extending cavities;
said cavities each having a bottom wall and opposed sidewalls forming circumferentially-extending grooves, and said opposed sidewalls of said grooves being disposed in plan to define an alternating laterally zig-zag excursion, so that strips of dough shaped therein have a crinkle configuration;

rotating the die roll and the feed roll in opposite directions to force the potato dough into said zig-zag grooves;
compacting and shaping the dough within said zig-zag grooves, and restricting the dough from forming a continuous sheet or layer between adjacent grooves, by placing an endless belt in contact with a portion of the periphery of the die roll and applying pressure against the die roll and belt with a resilient pressure roll; and
extracting the mutually separate crinkle-shaped strips of dough from the zig-zag grooves and depositing the shaped dough strips upon the belt in side-by-side mutually spaced and generally parallel dispositions, said extracting step being accomplished as the belt separates from the die roll.

4,362,755

PROCESS FOR MODIFYING STARCH WITH SODIUM OR CALCIUM STEAROYL-2-LACTYLATE

William A. Mitchell, Lincoln Park, N.J., and William C. Seidel, Monsey, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 960,218, Nov. 13, 1978, Pat. No. 4,260,642. This application Oct. 17, 1980, Ser. No. 198,078
Int. Cl.³ A23L *1/187*
U.S. Cl. 426—579 **21 Claims**

1. A process for producing a dry pregelatinized starch suitable for use in instant puddings comprising:
forming an aqueous slurry containing an ungelatinized starch and a modifier chosen from the group consisting of sodium stearoyl-2-lactylate and calcium stearoyl-2-lactylate, the modifier being present at levels effective to form light porous agglomerates and to impart the resultant dry pregelatinized starch when rehydrated with a smoother, creamier mouthfeel and a higher sheen without appreciable loss of viscosity or body than a starch pregelatinized without said modifier;
heating the slurry to a temperature and for a period of time sufficient to gelatinize the starch and under conditions to shatter the starch granules; and
drying the slurry.

4,362,756

BROWN SUGAR SWEETENED CONDENSED MILK AND PROCESS FOR PREPARATION THEREOF

Alexander W. Williams, Syracuse, N.Y., assignor to Borden, Inc., Columbus, Ohio

Filed Dec. 28, 1981, Ser. No. 335,226
Int. Cl.³ A23C 9/00
U.S. Cl. 426—587 5 Claims

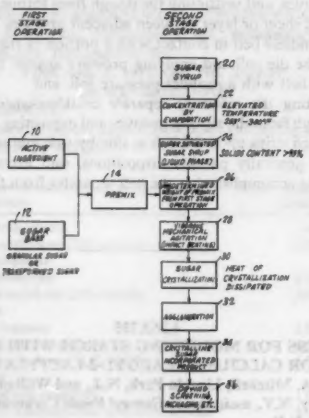
1. A sweetened condensed milk composition comprising at least 8.0% milk fat, 28% total milk solids, water, approximately 44.5% carbohydrate sweetener solids comprising a mixture of high ash, unrefined, brown sugar solids and sucrose, at least 75% of which is said brown sugar solids, and sufficient food grade alkaline stabilizer to adjust the pH of the sweetened milk to 6.75–6.85, prior to heat treatment, to avoid casein precipitation when the sweetened milk is heated to about 185° F. or above to form sweetened condensed milk.

4,362,757

CRYSTALLIZED, READILY WATER DISPERSIBLE SUGAR PRODUCT CONTAINING HEAT SENSITIVE, ACIDIC OR HIGH INVERT SUGAR SUBSTANCES

Andy C. C. Chen, Belle Mead, N.J.; Clifford E. Lang, Jr.; Charles P. Graham, both of Hicksville, N.Y., and Anthony B. Rizzutto, Piscataway, N.J., assignors to Amstar Corporation, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,553
Int. Cl.³ C13F 3/00, 1/02
U.S. Cl. 426—599 9 Claims



1. A method for preparing a cocrystallized sugar product containing an active ingredient selected from the group consisting of heat-sensitive, acidic, and high invert sugar substances, comprising:

(a) admixing the active ingredient with a dry sugar base to form a premix;

(b) concentrating a sugar syrup at a temperature in the range of about 255° F. to about 300° F. to a solids content of about 95% to 98% by weight, said sugar syrup containing no more than about 15% by weight non-sucrose solids;

(c) directly admixing the concentrated sugar syrup at a temperature 255°–300° F. with said premix to form a mixture;

(d) subjecting said resulting mixture upon admixing said premix to impact beating within a crystallization zone until a crystallized sugar product is formed, said crystallized sugar product made up of aggregates of fondant-size sucrose crystals and the active ingredient and having a moisture content of less than about 2.5% by weight; and

(e) recovering said crystallized sugar product from said crystallization zone.

4,362,758

PROCESS FOR PRODUCING A LOW-CALORIE SPREAD

Avril B. MacNeill, Gravesend, and Neil G. Hargreaves, Billericay, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,573
Claims priority, application United Kingdom, Sep. 30, 1980, 8031552
Int. Cl.³ A23D 3/02
U.S. Cl. 426—603 10 Claims

1. A process for producing a low-calorie food spread comprising

(i) producing an oil-in-water emulsion by proportioning

(a) a liquid fat phase comprising a plastic fat blend of a hardness not exceeding 3,000 g/cm² at 5° C. which constitutes less than 65 wt.% of the total emulsion, and

(b) a gelled aqueous phase containing at least 0.01 wt.% protein,

into a container which rotates at a speed such that the rotated emulsion emerging from said container is water-continuous;

(ii) subjecting the oil-in-water emulsion thus obtained to cooling and working in at least one surface-scraped heat exchanger to crystallize at least part of the fat;

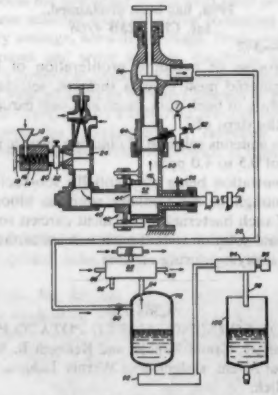
(iii) feeding the emulsion obtained in step (ii) into a container which is rotated at a speed conducive to substantially complete phase inversion to obtain a water-in-oil emulsion.

4,362,759

METHOD OF PRODUCING A SLURRY FROM PEANUTS AND CROP FOODS

Hubert Harris, Auburn, Ala., assignor to Peanut Research & Testing Labs., Inc., Albany, Ga.

Division of Ser. No. 80,581, Oct. 1, 1979, Pat. No. 4,302,111, which is a continuation-in-part of Ser. No. 57,741, Jul. 16, 1979, abandoned, which is a continuation of Ser. No. 899,368, Apr. 24, 1978, abandoned. This application Nov. 19, 1981, Ser. No. 322,972
Int. Cl.³ A23L 1/36
U.S. Cl. 426—632 13 Claims



1. The method of producing a slurry from peanuts and crop foods, comprising the steps of:

(a) continuously reducing said nuts to a paste form,

(b) continuously forming said paste into a strand,

(c) continuously delivering said strand along a first path adjacent a foreaminous support,

(d) continuously delivering under pressure a flow of liquid along a second path generally perpendicular to and intersecting said first path whereby said strand is forced through said support and mixed with said liquid to break up glomerates of ground nuts and to emulsify the oil content of said nuts, said mixing forming a slurry, and

(e) pumping said slurry away from said support at a rate sufficient to prevent the flooding of said support and to maintain a relatively low pressure zone proximate to said support.

4,362,760
FIBROUS FOOD MATERIAL AND PROCESS FOR PREPARING THE SAME

Hiroyuki Fujita; Shigeki Ashida, both of Takasago; Yoshiaki Taguchi, Kobe, and Masami Sakai, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 12, 1981, Ser. No. 242,985
Claims priority, application Japan, May 9, 1978, 53-109389
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—641 **11 Claims**

1. A process for preparing a processed food material of a continuous fibrous structure which comprises intermixing (1) a hydrous mixture containing 50–80% moisture and consisting essentially of 3 to 10 parts by weight of wheat protein and 0 to 7 parts by weight of meat based on the solid content ratio with (2) polysaccharide in an amount of 0.2 to 2.0% by weight of said hydrous mixture and (3) common salt in an amount of 0.5 to 20% by weight of said hydrous mixture, the ratio of said polysaccharide to said common salt being 1:1 to 15; forming the resulting admixture into a shape suitable for stretching, the temperature of the admixture throughout the intermixing step and forming step being maintained at 5°–30° C.; and then heating said shaped admixture at 85°–98° C. while stretching the same in a 0.5 to 10% aqueous salt solution of an alkali metal or an alkaline earth metal.

4,362,761
USE OF HEAT COAGULATED WHEY PROTEIN CONCENTRATE AS A SUBSTITUTE FOR GELLED EGG WHITE

Pei K. Chang, Montrose, and Gabriele E. Scibelli, New Rochelle, both of N.Y., assignors to Nutrisearch Company, Cincinnati, Ohio

Continuation of Ser. No. 54,042, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 858,322, Dec. 7, 1977, abandoned. This application Dec. 23, 1980, Ser. No. 220,209
Int. Cl.³ A23J *3/02*
U.S. Cl. 426—657 **7 Claims**

1. A method for preparing an imitation hard-cooked egg white having a consistency similar to hard-cooked egg whites which comprises heating a solution consisting essentially of a whey protein concentrate prepared by ultrafiltration having from about 40% to about 60% protein, from about 10% to about 30% lactose and from about 3% to about 15% ash at a solids content of from about 10% to about 30% at a temperature of about 80° C. to about 100° C. for a period of time for about 10 minutes to about 30 minutes in order to prepare a product having the consistency and appearance of hard-cooked egg white.

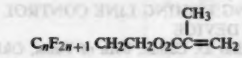
4,362,762
METHOD OF MAKING A WATER RESISTANT ORTHOPEDIC CAST

Julius A. Lindquist, Bridgewater, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Jun. 1, 1981, Ser. No. 268,942
Int. Cl.³ C04B *11/16*
U.S. Cl. 427—2 **4 Claims**

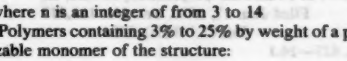
1. A method of forming a water-resistant orthopedic cast comprising applying to the cast bandage, while the cast bandage is wet with water, a fluorochemical selected from the group consisting of:

(a) esters of the structure:

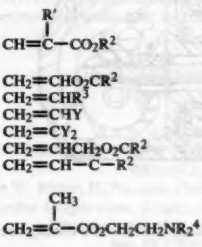


where n is an integer of from 3 to 14

(b) Polymers containing 3% to 25% by weight of a polymerizable monomer of the structure:

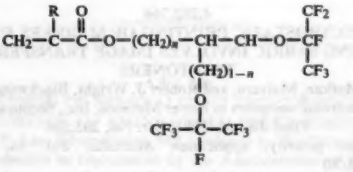


with a polymerizable vinyl compound selected from the group consisting of:



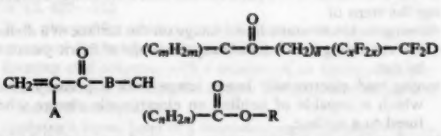
wherein R^1 is H or methyl, R^2 is a saturated alkyl group containing from one to 18 carbons, R^3 is a phenyl or alkyl substituted phenyl, R^4 is hydrogen or saturated alkyl groups of one to six carbon and Y is fluorine, chlorine or bromine:

(c) Polymers formed by the polymerization of monomers of the structure:



wherein R is H or CH_3, and n is zero or 1:

(d) Fluorocarbon compounds of the formula:



wherein R is selected from the group consisting of hydro-

gen, water-emulsifiable salt-forming cations and fluoroalkyl radicals of the formula $-(CH_2)_b-(C_yF_{2y})-CF_2E$, and wherein A is hydrogen or lower alkyl (C_1 to C_5), B is oxygen or NH, D and E are hydrogen or fluorine, m and n are integers from 0 to 4 inclusive, and totalling not more than 4, x and y are integers from 1 to 18 inclusive, and a and b are integers from 1 to 3 inclusive:

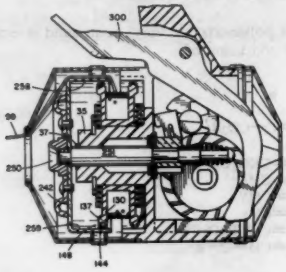
said fluorochemical being applied to said cast bandage as an aqueous dispersion containing from 2% to 30% by weight of said fluorochemical said aqueous dispersion containing a cationic or nonionic surfactant to maintain said fluorochemical in said dispersion, and allowing the cast to dry at room temperature.

4,362,763

METHOD OF MAKING FISHING LINE CONTROL DEVICE

John W. Puryear, and Arthur D. Callan, both of Tulsa, Okla., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jan. 17, 1980, Ser. No. 112,917
Int. Cl.³ B05D 1/04
U.S. Cl. 427—14.1 12 Claims



1. A method of fiber flocking the rim of a fishing reel spool comprising the steps of:

(1) providing a fishing reel spool having a flange with a rim wherein the rim is thinner than the flange;

(2) positioning the spool on a mandrel;

(3) coating only the rim with an adhesive,

(4) electrostatically depositing relatively short fibers on the rim;

(5) dislodging the fibers not adhered to the rim by the adhesive; and,

(6) curing the adhesive.

4,362,764

ELECTROSTATIC PRINTING OF MARKERS FOR CUTTING FABRIC INVOLVES IMAGE TRANSFER AND TWO TONERS

Josef Matkan, Malvern, and Robert J. Wright, Blackwood, both of Australia, assignors to Better Methods, Inc., Secaucus, N.J.

Filed Jul. 14, 1981, Ser. No. 283,205
Claims priority, application Australia, Jul. 24, 1980, PE4678/80
Int. Cl.³ B05D 1/06
U.S. Cl. 427—14.1 21 Claims

1. A method for the production of markers for the cutting of fabric or material in the garment and allied industries comprising the steps of

forming an electrostatic latent image on the surface of a dielectric recording member defining the shape of fabric pieces to be cut,

toning said electrostatic latent image with a primary toner which is capable of holding an electrostatic charge when fused to a surface,

transferring said primary toner deposit from said dielectric recording member to a receiving member the surface of which is relatively incapable of holding an electrostatic charge in comparison with said primary toner deposit,

fixing said primary toner deposit to said receiving member surface to form an electrostatic master,

electrostatically charging said fixed primary toner deposit on said electrostatic master,

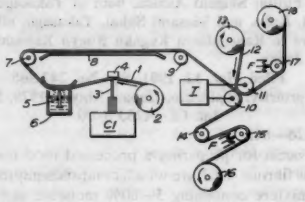
toning said primary toner deposit on said electrostatic master with a secondary toner, and

transferring electrostatically said secondary toner to a surface while simultaneously retaining said fixed primary toner deposit on said electrostatic master whereby to mark the said surface with the said secondary toner but retaining said master for forming further copies.

9. The method for the production of markers as defined generally in claim 1 characterised by the steps of

(a) feeding the said dielectric recording member past recording nibs and applying an electrical signal thereto to establish a marking pattern,

(b) passing the said dielectric recording member through a first



developer station to apply a primary insulating toner to areas conditioned by the said signal,

(c) passing the said dielectric recording member through a first transfer station between rollers while maintaining a transfer field between the said rollers,

(d) feeding the said recording member forward to also pass through the said first transfer station in close contact with the said dielectric recording member to receive the said primary insulating toner,

(e) passing the said receiving member over heating means to fuse the said primary toner to the said receiving member, to form a said master,

(f) feeding the said electrostatic duplicating master through a charging station to charge the said primary toner on the said electrostatic duplicating master,

(g) passing the said electrostic duplicating master through a second developer station to apply the said secondary toner, and using the said electrostatic duplicating member so formed to produce multiple copies of the said marking pattern.

4,362,765

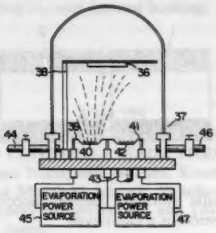
METHOD OF MANUFACTURING A GAS SENSING DEVICE

Atsushi Abe, Ikoma; Hisahito Ogawa, Katano; Masahiro Nishikawa, Amagasaki; Satoshi Sekido, Yahata, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 66,332, Aug. 14, 1979, Pat. No. 4,313,338.
This application Jun. 19, 1981, Ser. No. 275,254
Claims priority, application Japan, Aug. 18, 1978, 53-101100; Aug. 18, 1978, 53-101101; Aug. 23, 1978, 53-103026
Int. Cl.³ G01N 27/12
U.S. Cl. 427—38 9 Claims

1. A method of manufacturing a gas sensing device comprising the step of evaporating a material including at least one of a metal and its oxide in an atmosphere containing oxygen gas at a reduced pressure of an atmosphere containing an inert gas at a reduced pressure, thereby depositing a gas-sensitive resistive film of ultrafine particles having a mean diameter of between

10 and several hundred angstroms of said material on one of the major surfaces of a substrate of an electrical insulating



material formed with electrodes to provide a gas sensing element.

4,362,766

METHOD FOR PREPARING A PROTECTIVE AMORPHOUS SILICON PASSIVATING FILM ON A SEMICONDUCTOR DEVICE

Friedrich Dannhäuser; Karl Kempter, both of Munich; Jürgen Krausse, Baldham, and Manfred Schnöller, Halmhausen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,345

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 2836911

Int. Cl.³ H01L *21/314*

U.S. Cl. 427—39 **8 Claims**

1. Process for depositing a passivating film of amorphous silicon on a body of silicon semiconductor material, comprising disposing a a semiconductor body in a glow discharge path within a reaction chamber maintained under vacuum, conducting a flow of gaseous silicon-hydrogen compound into said reaction chamber to effect decomposition of the compound by the glow discharge energized by voltage from an external source of electrical power and deposition of a passivating film of amorphous silicon on the semiconductor body maintained in the range of 150° to 350° C., and regulating the operating conditions in the reaction chamber, namely, gaseous silicon-hydrogen pressure, flow rate of gaseous silicon-hydrogen, power in the glow discharge and temperature of the semiconductor body to obtain a content of hydrogen in the amorphous silicon between 5 and 40 atom-percent and a resistivity between 10^8 and 10^{10} ohm/cm.

4,362,767

MAGNETIC THIN FILM AND METHOD OF MAKING IT

Norimoto Nouchi, Katano; Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 21, 1979, Ser. No. 96,562

Claims priority, application Japan, Nov. 22, 1978, 53-144836

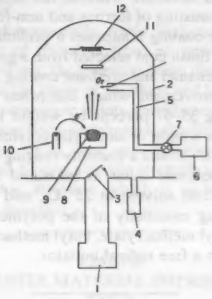
Int. Cl.³ G11B *5/64, 5/84*

U.S. Cl. 427—130 **3 Claims**

1. A method of making a magnetic thin film consisting essentially of the steps of:

(a) preparing a deposition material including at least one of $Fe_xCo_yCu_z$ alloys and oxides of said alloys, wherein x, y and z represent the respective atomic ratios, $x+y+z=1$, $0.50 \leqq x < 0.95$, $0.05 < y \leqq 0.30$ and $0 < z \leqq 0.20$;

(b) in a container, vapor depositing a film of said deposition material into a substrate held at a temperature between 200° and 500° C. under oxygen pressure in the range above 10^{-4} Torr, but below 10^{-3} Torr; and,



(c) annealing said deposited film for at least 18 minutes under an oxygen pressure above 10^{-4} Torr, but below $760 \times (1/5)$ Torr, with said substrate being held at a temperature between 200° and 500° C.

4,362,768

TREATMENT OF GLASS FOR HIGH TEMPERATURE RESISTANCE

George W. Ritter, II, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 14, 1981, Ser. No. 293,035

Int. Cl.³ B05D *3/10*

U.S. Cl. 427—307 **10 Claims**

1. A method of treating glass fibers to improve their resistance to high temperatures which comprises:

a. contacting said fibers with tetrahydrofuran-2, 3, 4, 5-tetracarboxylic acid to produce leached fibers;

b. contacting said leached fibers with colloidal silica; and

c. contacting the fibers from step b. with an aqueous solution of the salt of a refractory metal to deposit said refractory metal salt thereon.

4,362,769

METHOD OF NEUTRALIZING THE CORROSIVE SURFACE OF AMINE-CURED EPOXY RESINS

Sheng Y. Lee, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 14, 1981, Ser. No. 293,412

Int. Cl.³ B05D *3/00*

U.S. Cl. 427—322 **8 Claims**

1. A process for making a cured epoxy resin polymer, with a corrosion free surface area including:

forming said polymer with a mixture of an epoxy resin prepolymer and an aliphatic amine, said aliphatic amine acting as a curing agent;

applying a liquid layer of a mono-isocyanate or mono-isothiocyanate reagent to said surface area of said polymer; and

rinsing said reagent from said surface area.

4,362,770

NITROCELLULOSE-FREE PRIMER-SURFACER

John Mathai, and Larry J. Morrison, both of Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Apr. 2, 1981, Ser. No. 250,442
Int. Cl.[3] B05D 1/36, 7/00
U.S. Cl. 427—409 20 Claims

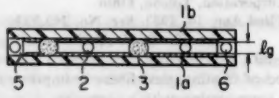
1. In a coated substrate wherein the substrate is selected from a group consisting of ferrous and non-ferrous metals and plastics, and the coating comprises a preliminary primer-surfacer coat and a finish coat selected from a group consisting of acrylic lacquer, enamel and urethane coating applied over said primer, the improvement which comprises said primer-surfacer comprising 35–67 percent by weight inert solvent and 65–33 percent by weight of an acrylic polymer vehicle having an acid value of 25–35 and a viscosity ranging from 16–50 poise at about 40% polymer solids as measured in a toluene/isopropanol, 95%/5%, solvent at 25° C., said acrylic polymer vehicle consisting essentially of the polymerization reaction product of methyl methacrylate, butyl methacrylate and methacrylic acid with a free radical initiator.

4,362,771

LIQUID CRYSTAL DISPLAY ELEMENT WITH GAP CONTROLLING MATERIAL AND PROCESS FOR PRODUCTION THEREOF

Takao Umeda, Hitachi; Tatsuo Igawa, Kitaibaraki; Yuzuru Simazaki, Hitachi; Takao Miyashita, Mito, and Fumio Nakano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 311,971
Claims priority, application Japan, Oct. 20, 1980, 55-145809
Int. Cl.[3] C09K 3/34
U.S. Cl. 428—1 28 Claims



15. In a liquid crystal display element comprising a pair of transparent substrates at least one of which is a flexible thin plate, electrodes formed on the individual surfaces thereof facing each other, a liquid crystal material layer held between the substrates, and a gap controlling material for keeping the gap between said substrates, the improvement wherein said gap controlling material contains a polymer solid and an insulating material having a higher softening point and rigidity than does the polymer solid and is dispersed and fixed in an insulating coating film formed on the surface of at least one of the substrates.

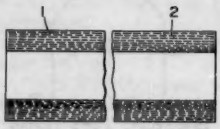
4,362,772

VIBRATORY ELEMENTS FOR AUDIO EQUIPMENT

Tsunehiro Tsukagoshi; Shinichi Yokozeki; Sumio Hagiwara; Masataka Uchidoi; Toshikazu Yoshino, and Yasuyuki Arai, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 244,895
Claims priority, application Japan, Mar. 31, 1980, 55-40267; Mar. 31, 1980, 55-40268; Mar. 31, 1980, 55-40269
Int. Cl.[3] B32B 1/08, 5/00, 9/00
U.S. Cl. 428—36 12 Claims

1. An acoustic vibratory element fabricated from a kneaded mixture comprising polypropylene, polymethyl methacrylate and flaky graphite powder, the graphite flakes being oriented substantially parallel to the surface of the element.



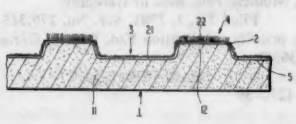
12. The acoustic vibratory element according to claim 1 wherein said element is a cantilever.

4,362,773

FLOCKED FOAM WITH EMBOSSED PATTERN

Yasuo Shikinami, Osaka, Japan, assignor to Takiron Co., Ltd., Osaka, Japan

Filed Jun. 26, 1980, Ser. No. 163,138
Claims priority, application Japan, Jun. 26, 1979, 54-88128[U]; Nov. 9, 1979, 54-156060[U]; Nov. 21, 1979, 54-162385[U]
Int. Cl.[3] B32B 3/26; B05D 1/06
U.S. Cl. 428—90 10 Claims



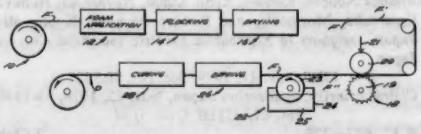
1. A flocked foam having an embossed pattern provided by a high-frequency welder, said foam comprising a partially cross-linked foam substrate, having from 10 to 75% gel fraction in boiling toluene for 15 hours formed from (I) a (A) 1,2-polybutadiene resin or (B) a polymer blend, the polymeric components of which are a 1,2-polybutadiene resin as one component thereof and, as a second component thereof, a polymer selected from the group consisting of vinyl acetate-/olefinic, vinyl alcohol/olefinic, and acrylic ester/olefinic copolymers containing more than about 10 mol% of polar component, and (II) modacrylic pile fibers consisting of 35% to 85% acrylonitrile and 65% to 15% vinyl chloride flocked on the surface of the foam substrate.

4,362,774

DRAPERY FABRIC FOAM BACKING

William A. Brandon, Jr., and William D. Bailey, both of Burlington, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 107,636, Dec. 27, 1979, abandoned. This application Jun. 16, 1981, Ser. No. 274,200
Int. Cl.[3] B05D 1/14, 1/16, 3/10; B32B 5/18
U.S. Cl. 428—159 11 Claims



1. A drapery fabric having desirable textile properties and produced by applying a wet, cross-linking foam backing to the moving web of fabric; at least partially drying, without significantly curing, the wet foam backing; embossing the foam

backing; applying an aqueous solution consisting essentially of water, a release agent, a curing catalyst, and a wetting agent to the foam backing at about 50–80% pickup on dry foam solids weight; and curing the wet foamed backing.

4,362,775

POLYESTER FILM-HEAT-BONDED METAL SHEET AND CONTAINER MADE THEREOF

Kenji Yabe, Shiga; Masayoshi Asakura, Kusatsu; Hiroki Sano, Yokosuka, and Masanori Aizawa, Yokohama, all of Japan, assignors to Toray Industries, Inc. and Toyo Seikan Kaisha, Ltd., both of, Japan

Filed Jul. 1, 1980, Ser. No. 165,192

Claims priority, application Japan, Jul. 5, 1979, 54/85289

Int. Cl.³ B32B *15/08, 27/36;* **C09J** *13/14, 13/16*

U.S. Cl. 428—213 **17 Claims**

1. A polyester film-heat-bonded metal sheet, which comprises a biaxially oriented polyester film or films, heat-bonded to a metal sheet by means of an adhesive layer interposed therebetween, said adhesive layer is made of a polyblend comprised of, based on the weight of the polyblend, 5 to 80% by weight of at least one high melting point polyester having a melting point of at least 200° C. and 20 to 95% by weight of at least one low melting point polyester having a melting point of at least 100° C., but not higher than a temperature which is 5° C. lower than the melting point of the high melting point polyester.

17. A polyester film-heat-bonded metal sheet according to claim 1 or 2, wherein the total thickness of the biaxially oriented film and the adhesive layer is in the range of 5 to 500 microns, the adhesive layer has a thickness of at least 2 microns and the ratio in thickness of the biaxially oriented polyester film to the adhesive layer is in the range of 1/0.05 to 1/5.

4,362,776

SIEVE BELT WITH FILLER MATERIAL

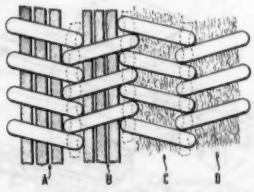
Johannes Lefferts, LM Enschede, and Roelof Roelofs, LT-Hengelo, both of Netherlands, assignors to Siteg Siebtechnik GmbH, Ahaus-Alstatte, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,228

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039873

Int. Cl.³ D04H *3/02*

U.S. Cl. 428—222 **10 Claims**



1. A sieve belt comprised of a plurality of helices made from thermoset synthetic resin material with adjacent helices intermeshed so that the windings of one helix enter between the windings of the adjacent helix, a pintle wire disposed in each of the respective channels formed by the intermeshed windings of adjacent helices and a filler material within the hollow interior of each of the helices, said filler material being comprised of crimped or undulating filaments.

4,362,777

NONWOVEN SHEETS OF FILAMENTS OF ANISOTROPIC MELT-FORMING POLYMERS AND METHOD THEREOF

Philip E. Miller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 19, 1982, Ser. No. 340,638

Int. Cl.³ D03D *3/00*

U.S. Cl. 428—224 **10 Claims**

1. A strong dimensionally stable high-melting nonwoven sheet comprised of filaments from an optically anisotropic melt-forming polymer, the filaments being disposed in multiple directions within the plane of the sheet and being self-bonded at a plurality of cross-over points, the filaments between bond points being substantially undeformed, the fibrous sheet having a tensile strength in at least one direction of at least 1.0 $N/cm//g/m^2$ and having a tensile strength in a direction perpendicular to that direction which is at least 25% of the strength in that direction.

4,362,778

FOAM COMPOSITE MATERIAL IMPREGNATED WITH RESIN

Bengt Andersson, Söraker, and Olof Tanner, Sundsvall, both of Sweden, assignors to KemaNord AB, Stockholm, Sweden

Filed May 5, 1981, Ser. No. 260,677

Claims priority, application Sweden, May 21, 1980, 8003776

Int. Cl.³ B32B *5/00, 5/20*

U.S. Cl. 428—240 **11 Claims**

1. A laminate comprising:

a foam composite material and at least one further such a material or another sheet material in which each foam composite material includes

(a) a material in the form of a thin web,

(b) a curable resin in the C-stage, i.e. which has passed from an initial uncured A-stage, in which the resin is meltable, poorly cross-linked and soluble in solvents, via an intermediate B-stage to a cured C-stage, in which the resin is not meltable, completely cross-linked and insoluble, and

(c) expanded thermoplastic microspheres and in which foam composite materials, the curable resin and the microspheres are uniformly distributed in the web material and whereby at least two materials are bonded to each other by a transition from B-stage to C-stage of the curable resin.

4,362,779

PROCESS OF SILVERING ARTICLES HAVING A BASE OF POLYAMIDES

Andre Arsac, Vernaison, France, assignor to Rhone-Poulenc-Textile, France

Continuation of Ser. No. 876,664, Feb. 10, 1978, abandoned, which is a continuation of Ser. No. 686,401, May 14, 1976, abandoned, which is a continuation of Ser. No. 493,456, Jul. 31, 1974, abandoned. This application May 8, 1981, Ser. No. 262,210

Claims priority, application France, Aug. 1, 1973, 73 28614

Int. Cl.³ B32B *7/00;* **B05D** *3/10*

U.S. Cl. 428—263 **8 Claims**

1. A process for improving the antistatic properties of an article made of a polyamide polymer by covering at least one surface of said polyamide article with a layer of silver consisting essentially of

treating at least one surface of said article with an aqueous bath of a polyhydroxy benzene reducing agent which is a swelling agent for said polyamide, with a concentration of about 1% to about 30% by weight at a temperature between room temperature and 90° C. to permit said polyhydroxy benzene reducing agent to swell said polyamide, and then

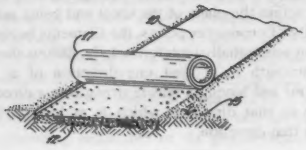
treating the resulting product with an ammoniacal silver nitrate solution.

4,362,780

FIBER REINFORCED MEMBRANE PAVING CONSTRUCTION

Alfred Marzocchi, Newark, and Richard F. Shannon, Lancaster, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 903,413, May 8, 1978, abandoned. This application May 7, 1980, Ser. No. 147,436
Int. Cl.[3] B32B *5/16, 11/02*
U.S. Cl. 428—283 3 Claims



1. A prefabricated unitary section of membrane construction for use in paving comprising a sheet-like body of unbonded fibers, said body being impregnated with heated asphalt material, flake glass in the impregnated sheet-like body in an amount in a range of one percent and ten percent by weight, said section being cooled to set the asphalt material.

4,362,781

FLUSHABLE PREMOISTENED WIPER

Ralph L. Anderson, Boothwyn, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Sep. 21, 1981, Ser. No. 303,935
Int. Cl.[3] B32B *9/00;* B08B *1/00*
U.S. Cl. 428—291 6 Claims

1. A water-dispersible pre-moistened wiper comprising a non-woven web having a majority of papermaking fibers, said web being impregnated with a modified guar gum, and an aqueous, alkaline lotion containing borate ions.

4,362,782

LOW TEMPERATURE CURE INTERLAMINAR COATING

Norman M. Pavlik, Plum Boro, and John Sefko, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 25, 1980, Ser. No. 190,693
Int. Cl.[3] B32B *15/04, 13/06;* C08K *3/10*
U.S. Cl. 428—336 3 Claims

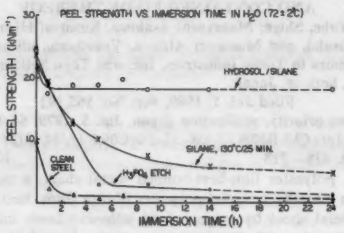
1. An article of manufacture comprising a substrate steel suitable for use in a magnetic circuit and an at least 0.05 mil coating on said substrate, the coating consisting essentially of the reaction products of a composition containing by weight 2% to 6% zinc, from about 0.1% to about 1% nickel, from about 4% to about 8% phosphorus, from about 0.1% to about 1% of a wetting agent, and from about 5% to about 15% of magnesium silicate as an interlaminar resistance improving agent, from about 3% to about 10% of an agent for improving the smoothness of the coating selected from the group consisting of boric acid and aluminum nitrate, and the balance essentially water.

4,362,783

POLYMER COATINGS AND METHODS OF APPLYING SAME

Lionell Graham, Falls Township, Lower Bucks County, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 26, 1980, Ser. No. 181,512
Int. Cl.[3] B32B *15/18, 15/08*
U.S. Cl. 428—338 16 Claims



1. In combination, a substrate and a polymer adhesion enhancing layer thereon comprises the substrate, a wetting hydrosol having a cationic constituent on at least one surface of the substrate and adherent thereto and a coupling agent on the hydrosol and adherent thereto, the cationic constituent of the wetting hydrosol being dissimilar to any metallic constituent of the underlying substrate.

11. A coated metal comprising a base metal, a monolayer of a hydrous oxide wetting hydrosol thereon having a cationic constituent different from the base metal, and a compatible coupling agent over the hydrosol.

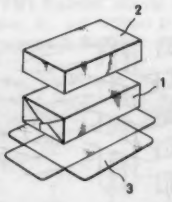
13. A printed circuit board comprises a base metal, a hydrous oxide wetting hydrosol on at least one surface of the base metal, the hydrosol having a cationic constituent which is different from the base metal, a coupling agent therefor and a compatible polymeric coating thereover.

4,362,784

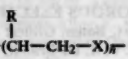
PACKING MATERIALS FOR MOLTEN CONTENTS

Takeo Kato, Ohmiya, and Nobuyoshi Fukuda, Tokyo, both of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,467
Int. Cl.[3] B32B *9/00*
U.S. Cl. 428—340 5 Claims



1. A packing material for molten contents at a temperature of 75° to 95° C. comprising a base material film on which is extrusion-coated with 20 to 45 g/m^2 of a resin (C) comprising an ethylene-vinyl acetate copolymer (A) having a vinyl acetate content of approximately 5 to 40 percent by weight and a copolymer (B) of ethylene or an alpha-olefin with an unsaturated carboxylic acid or its anhydride, said copolymer (B) having a molecular weight of approximately 2,000 to 20,000 and a melting point of 70° to 80° C., and having the following general formula:



(wherein R stand for a hydrogen atom or an alkyl group having between 1 and 98 carbon atoms, inclusive, and X stands for a residue of an unsaturated carboxylic acid or its anhydride), in an (A) to (B) ratio between approximately 99:1 and 60:40 by weight.

4,362,785

POLYMERS CONTAINING 2,5-OXOLANYLENE SEGMENTS

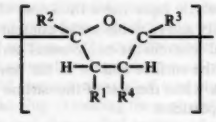
William J. Schultz, White Bear Lake, Minn., and Alan R. Katritzky, Norwich, England, assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Division of Ser. No. 803,207, Jun. 3, 1977, Pat. No. 4,309,516, which is a continuation-in-part of Ser. No. 740,661, Nov. 10, 1966, abandoned, which is a continuation-in-part of Ser. No. 692,602, Jun. 2, 1976, abandoned. This application Jul. 17, 1981, Ser. No. 284,229

Int. Cl.³ B32B *27/06, 27/36*

U.S. Cl. 428—480 2 Claims

1. As an article of manufacture, a normally hydrophobic substrate which has been rendered hydrophilic by application thereto of a coating of a water-insoluble polymer containing recurring 2,5-oxolanylene units of the formula:



wherein at least 60 percent of said units are joined directly to one another so as to provide segments consisting of at least six of said units; and wherein R^1, R^2, R^3 and R^4 are, individually, hydrogen or alkyl groups containing up to 8 carbon atoms each.

4,362,786

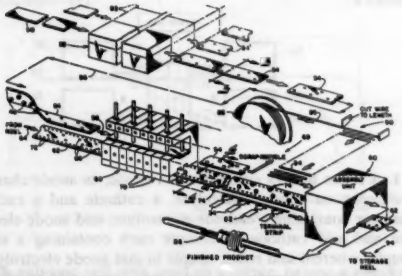
APPARATUS AND PRODUCT USEFUL IN MANUFACTURE AND HANDLING OF CABLE SEALS

Myles N. Murray, Chargin Falls, Ohio, assignor to Industrial Electronic Rubber Company, Twinsburg, Ohio

Division of Ser. No. 8,914, Feb. 2, 1979, Pat. No. 4,255,479. This application Feb. 27, 1981, Ser. No. 238,971

Int. Cl.³ B32B *9/04;* B26F *1/00*

U.S. Cl. 428—36 13 Claims



1. A product useful in automatic cable termination assembly machinery comprising: a flexible carrier strip having a plurality of seal receiving openings spaced along the length thereof, and cable seals inserted in such openings, said cable seals being of tubular configuration and having their axes extending substantially at right angles to the planer extent of said carrier strip.

4. A punch and die apparatus for punching cable seals from an integral belt and for inserting simultaneously the cable seals into a flexible carrier strip, comprising:

alignment means for aligning at least one cable seal in the belt with a seal receiving opening in the flexible carrier strip, and

punch means for shearing such one cable seal from the belt and simultaneously inserting the sheared cable seal into such seal receiving opening in the flexible carrier strip.

4,362,787

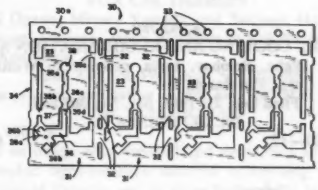
FLAG STRIP FOR USE IN PRINT HAMMERS

Val K. Jezbera, Thousand Oaks, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Division of Ser. No. 968,278, Dec. 11, 1978, Pat. No. 4,269,118. This application Nov. 3, 1980, Ser. No. 203,159

Int. Cl.³ B21C *37/00;* B41J *9/02;* H01F *41/02*

U.S. Cl. 428—572 6 Claims



1. A flag strip for use in the fabrication of print hammers, comprising:

an elongated, unitary, planar thin strip of metal having a plurality of identical flag panels formed therein, each flag panel including:

a generally rectangular flag region,

a frame substantially surrounding said flag region,

a plurality of links connecting said frame to said flag region, and

a connector arm extending from said frame at one side of a centerline through said flag region.

4,362,788

FUEL CELL SYSTEM WITH ANODE AND CATHODES OPERATING AT DIFFERENT PRESSURES

Hansraj C. Maru, and Bernard S. Baker, both of Brookfield Center, Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed Mar. 11, 1981, Ser. No. 242,671

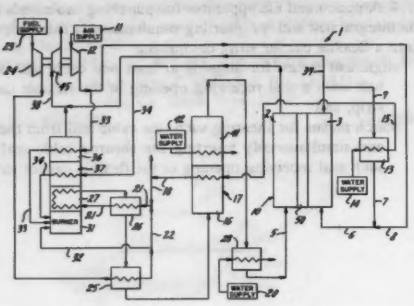
Int. Cl.³ H01M *8/04*

U.S. Cl. 429—13 10 Claims

1. A method for operating a fuel cell system which includes a fuel cell provided with anode and cathode sections, the method comprising

supplying oxidant process gas to said cathode section at a

first pressure; and supplying fuel process gas to said anode section at a second pressure which is less than said first



pressure such that the difference between said first and second pressures is greater than about 1 psi.

4,362,789

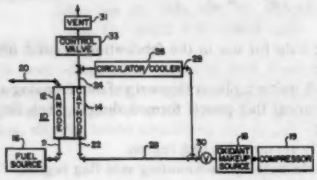
FUEL CELL COOLING AND RECIRCULATION SYSTEM

Shyam V. Dighe, Bombay, India, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1981, Ser. No. 303,808

Int. Cl.³ H01M 8/04

U.S. Cl. 429—17 **9 Claims**



1. A fuel cell system comprising:

a fuel cell stack including an anode and a cathode;

means for supplying a hydrogen-containing fuel to said anode;

means for supplying an oxygen-containing oxidant to said cathode in an amount in excess of the stoichiometric amount relative to said fuel;

means for conducting reaction products including excess oxidant and water vapor from said cathode;

means for cooling and flowing said products through a flow constriction, said cooling and flow means including a liquid coolant injector;

means disposed downstream of said flow constriction for separating said coolant, oxidant and water into a vaporous portion having a large oxidant and small coolant and water content and a liquid portion having a large coolant and water content and a small oxidant content, said separating means including an outlet for said vapor portion; and

a conduit interconnecting said outlet and said cathode;

said cooling and flow means providing sufficient pressure head to flow said vaporous portion through said interconnecting conduit to said cathode.

4,362,790

POROUS ELECTRODE

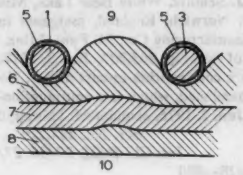
Alain P. O. Blanchart, Balen; Gilbert J. L. Van Bogaert, Mol; Constantine W. M. V. A. De Brandt, Itterbeek, and Gustaaf J. F. Spaepen, Dessel, all of Belgium, assignors to Electrochemische Energieconversie, N.V., Geleen, Netherlands

Continuation of Ser. No. 113,029, Jan. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 968,812, Dec. 12, 1978, abandoned. This application Feb. 12, 1981, Ser. No. 235,157

Claims priority, application Netherlands, Dec. 28, 1977, 7714464

Int. Cl.³ H01M 4/92

U.S. Cl. 429—42 **12 Claims**



1. A porous electrode comprising at least a porous catalytic layer containing a catalytically active noble-metal, carbon and a polymeric binder and a porous metallic collector, which is situated on the electrode-side of the porous catalytic layer, wherein the catalytic layer has a thickness of less than 80 μm and a catalytically active noble-metal content of at most about 250 μg/cm², and wherein the noble-metal particles in the layer are situated on the surface and/or in the pores of part of the carbon particles, while the rest of the carbon particles contain no noble-metal particles.

4,362,791

REDOX BATTERY

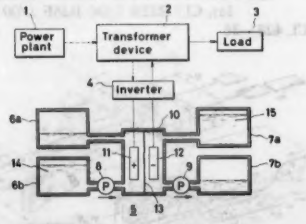
Hiroko Kaneko, Sakuramura, and Ken Nozaki, Ibaragi, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,255

Claims priority, application Japan, Jun. 17, 1980, 55-81940; Jun. 17, 1980, 55-81941

Int. Cl.³ H01M 8/20

U.S. Cl. 429—101 **5 Claims**

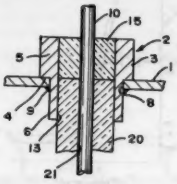


1. A redox battery comprising an anode, an anode chamber containing an anode electrolyte, a cathode and a cathode chamber containing a cathode electrolyte, said anode electrolyte and said cathode electrolyte each containing a redox couple, wherein said redox couple in said anode electrolyte is a Mn 3-2 redox couple and said anode electrolyte contains at least a stoichiometric amount of a complexing agent or chelating agent whereby the standard electrode potential of said redox couple in said anode electrolyte is shifted to a more negative value.

4,362,792
CONDUCTOR SEAL ASSEMBLY

Benjamin Bowsky, Maineville; Allen E. Siegel, Loveland, and Richard F. Kerber, Cincinnati, all of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 1, 1980, Ser. No. 211,503
Int. Cl.³ H01M *2/30*
U.S. Cl. 429—181 **1 Claim**

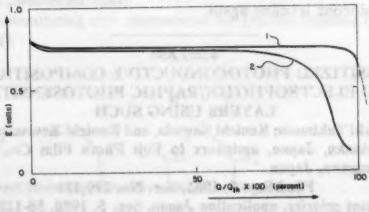


1. A pass-through conductor capsule mounted in an external wall of a container, comprising an elongated cylindrical metal sleeve having an axial cylindrical passage through it defined by an inner wall of uniform diameter through its entire length, said sleeve having a thick-walled section and a thin-walled section, defining between them an external step, said thick-walled section projecting outboardly from said container and said thin-walled section extending a substantial distance within the container beyond said wall, an electrical conductor extending through and mounted in said passage, a glass seal bonded to said conductor and to said passage-defining wall wholly within said thick-walled section, and a cylindrical ceramic baffle plug mounted on and around said conductor, of a diameter to fit closely within said passage, one end of said plug being fused to said glass seal, said plug extending through and beyond the end of said passage in said thin-walled section of said sleeve along said conductor, said capsule being welded to said container wall on the inside surface thereof around the outside of said thin-walled section, intermediate the length of the said ceramic plug.

4,362,793
GALVANIC CELL WITH SOLID ELECTROLYTE

Rainer Bittihn, Kelkheim; Armin Wagner, Laubach, both of Fed. Rep. of Germany; Jean-Paul Randin, Cortaillod, and Jean-Daniel Rosselet, Fenin, both of Switzerland, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,429
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026141
Int. Cl.³ H01M *6/18*
U.S. Cl. 429—191 **6 Claims**



1. A galvanic cell with solid electrolyte, having a negative lithium or sodium electrode, a solid positive electrode and a solid electrolyte between the electrodes and dischargeable at room temperature, wherein

the positive electrode consists, in the charged state, either individually or intermixed, of metallic Sb, Bi or oxides and chalcogenides of these metals, and

in the discharged state, of a reversible intermetallic combination of the Sb or, Bi, or Sh and Bi with the alkali metal of the negative electrode, and

the electrolyte is Li_3N when the negative electrode is a lithium electrode and is $Na_3Zr_2Si_2PO_{12}$ when the negative electrode is a sodium electrode.

4,362,794
ELECTROLYTE

Kuzhikalail M. Abraham, Needham Heights, Mass., assignor to EIC Corporation, Newton, Mass.

Filed Oct. 2, 1980, Ser. No. 193,118
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—196 **5 Claims**

1. An electrolyte composition comprising

an electrolyte salt having the formula $MZSX_2$, wherein

M is an alkali metal,

Z is selected from the group consisting of boron, aluminum, gallium, indium, and thallium, and

X is a halogen,

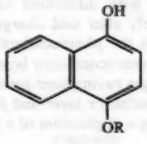
dissolved in a fluid oxyhalide solvent electropositive with respect to lithium.

4,362,795
PROCESS FOR FORMING PHOTOGRAPHIC IMAGES AND PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL FOR USE THEREIN

Junkichi Ogawa; Minoru Yamada, and Tsutomu Hamaoka, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 29, 1980, Ser. No. 182,545
Claims priority, application Japan, Aug. 29, 1979, 54-110002
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—9 **42 Claims**

36. In an image-wise exposed and developed silver halide photographic light-sensitive material comprising a support having coated thereon one or more hydrophilic layer(s), the improvement wherein the image resulting from said development has improved granularity and comprises both a dye and silver and wherein at least one of said layer(s) prior to development contains a 4-alkoxy-1-naphthol represented by the formula (I)



(I)

wherein R represents an alkyl group, an alkoxy-alkoxy group, or a hydroxyalkul group, and the number of carbon atoms in the substituent represented by R is from 1 to 4.

4,362,796
PROCESS OF MAKING PHOTOGRAPHIC PRINTS SIMULATING DEPTH AND RESULTANT ARTICLE

Robert Monroe, 255 W. 90th St., New York, N.Y. 10024

Continuation-in-part of Ser. No. 73,666, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 922,821, Jul. 10, 1978, abandoned. This application Jun. 11, 1981, Ser. No. 272,552
Int. Cl.³ G03C *7/00, 5/26*
U.S. Cl. 430—12 **7 Claims**

1. The method of making a photographic reproduction which provides an illusion of depth which comprises the steps of providing a film which includes a transparent backing and a silver halide containing emulsion having a textured facing

surface, exposing said emulsion to a source of actinic energy through an energy transmitting medium having superposed areas of energy blocking, energy transmitting and partial energy transmitting material, subjecting said exposed emulsion to a developer solution, thus to reduce the halides in said emulsion to colloidal silver in proportion to the amount of actinic energy received thereon, and thereafter subjecting said partially developed emulsion to an ammoniacal silvering reducer bath formulated to produce a mirror surface of pure silver in situ in areas of unreduced silver halide.

4,362,797

ELECTROPHOTOGRAPHC PROCESS TO RELEASE TRAPPED CHARGES BY CHARGING AND ULTRAVIOLET EXPOSURE

Akira Shimizu, Fuchu, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 961,033, Nov. 15, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 211,413

Claims priority, application Japan, Nov. 22, 1977, 52-140260

Int. Cl.³ G03G *5/14, 13/24*

U.S. Cl. 430—55 **3 Claims**

1. In an electrophotographic process by the Carlson method, said method employing a composite photosensitive member including an electrically conductive supporting body, an intermediate layer of organic insulator for preventing charges from being injected from said supporting body, a photoconductive semiconductor layer having a charge generating function, and a transparent photo semiconductor layer having charge retentive and transporting functions, said layers being in the form of a stack in the recited order; and including the steps of uniformly charging said composite photosensitive member in one polarity; projecting a visible light image of a document to be copied to form an electrostatic latent image on the composite photosensitive member; developing the latent image with toners to form a toner image; transferring the toner image onto a record medium to form a copy; and erasing said electrostatic latent image after a plurality of copies have been formed from the same and single electrostatic latent image by repeating said developing and transferring, the improvement comprising:

uniformly charging the composite photosensitive member in an opposite polarity and irradiating the composite photosensitive member with ultraviolet rays simultaneously with or immediately after said charging step to release charges trapped in the photoconductive semiconductor layer and the photo semiconductor layer of said composite member, said charges having been generated in the photoconductive semiconductor layer and the photo semiconductor layer during a duplication of a plurality of copies.

4,362,798

HYDRAZONE AND PYRAZOLINE OR ACETOSOL YELLOW CONTAINING CHARGE TRANSPORT LAYER, PHOTOCONDUCTOR AND ELECTROPHOTOGRAPHIC PROCESS USING THE SAME

Howard W. Anderson, and Robert B. Champ, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,737

Int. Cl.³ G03G *5/06, 5/09*

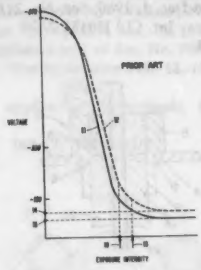
U.S. Cl. 430—59 **2 Claims**

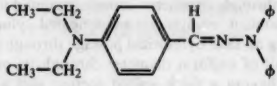
1. In an electrophotographic element comprising:

an electrically conductive layer;

a charge generation layer responsive to actinic radiation to generate an electron-hole pair; and

a p-type charge transport layer adjacent the charge generation layer, the charge transport layer comprising a hydrazone of the composition p-diethylaminobenzaldehyde(diphenylhydrazone), i.e.:





and a polymeric binder;

whereby holes generated by photoelectric phenomenon in the charge generation layer may be transported through the charge transport layer to facilitate localized selective discharge of charged surfaces of the element, the improvement comprising:

the addition of [DEASP or Acetosol Yellow] 1-phenyl-3[p-diethylaminostyryl]-5-[p-diethylaminophenyl]-pyrazoline to said charge transport layer in an amount which is effective to produce the result that the photosensitivity of the photoconductor is not appreciably affected by exposure to limited amounts of ambient light.

4,362,799

IMAGE-HOLDING MEMBER WITH A CURABLE EPOXYACRYLATE RESIN INSULATING LAYER

Hideyo Kondo, Ibaraki, and Yuichi Yashiki, Toride, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1979, Ser. No. 34,024

Claims priority, application Japan, Apr. 28, 1978, 53-51840; Apr. 28, 1978, 53-51841; Nov. 8, 1978, 53-137725

Int. Cl.³ G03G *5/10, 5/14*

U.S. Cl. 430—67 **7 Claims**

1. An electrophotographic image-holding member for holding electrostatic images and/or toner images comprising a support layer, a photoconductive layer overlying the support layer and an insulating layer on the surface of the member comprising (i) a curable epoxyacrylate resin having as a polymerization unit, bisphenol A diglycidyl ether diacrylate, and (ii) a silicone leveling agent.

4,362,800

SENSITIZED PHOTOCONDUCTIVE COMPOSITIONS AND ELECTROPHOTOGRAPHIC PHOTOSENSITIVE LAYERS USING SUCH

Masaaki Takimoto; Kenichi Sawada, and Kouichi Kawamura, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 4, 1981, Ser. No. 299,424

Claims priority, application Japan, Sep. 5, 1980, 55-123067

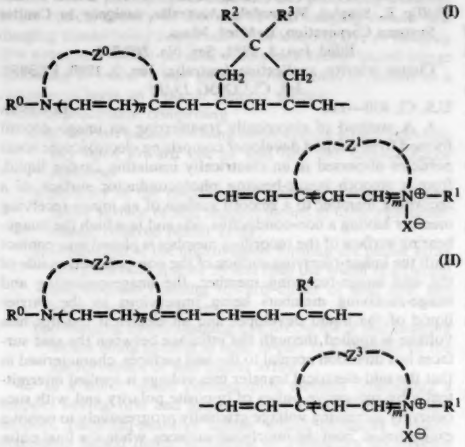
Int. Cl.³ G03G *5/04*

U.S. Cl. 430—83 **8 Claims**

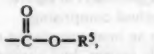
1. An electrophotoconductive composition comprising:

(a) a photoconductor;

(b) a sensitizing dye represented by the following general formula (I) or (II):



wherein R^0 and R^1, which may be the same or different, each represents an alkyl group, a hydroxyalkyl group, an alkoxyalkyl group, an aralkyl group, a carboxyalkyl group, a carboxylatoalkyl group linked to an alkali metal cation, a sulfoalkyl group, or a sulfonatoalkyl group linked to an alkali metal cation; R^2 and R^3 each represents a hydrogen atom, or an alkyl group having 1 to 5 carbon atoms; R^4 represents a hydrogen atom, a halogen atom, a hydroxy group, a carboxy group, an alkyl group having 1 to 5 carbon atoms, an unsubstituted or substituted aryl group, or an acyloxy group shown by



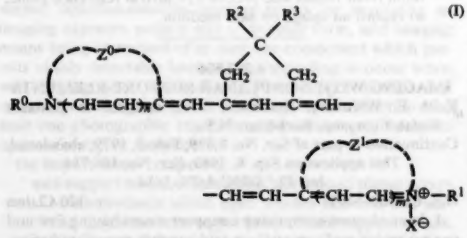
wherein R^5 represents an alkyl group having 1 to 5 carbon atoms, a phenyl group, or a substituted phenyl group; Z^0 and Z^1 each represents an atomic group necessary for forming a 5-membered or 6-membered heterocyclic ring or a condensed ring including a 5-membered or 6-membered heterocyclic ring; Z^2 and Z^3 each represents an atomic group necessary for forming a 3,3-dialkylindole ring or a 3,3-dialkylbenz[e]indole ring; m and n each represents 0 or 1; and $X^\ominus$ represents an acid anion; and

(c) a film-forming high molecular weight binder.

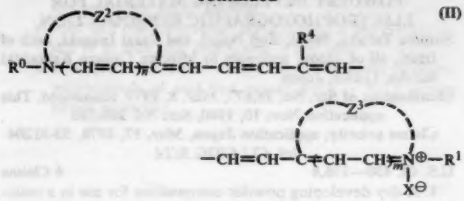
5. An electrophotographic photosensitive layer comprising a layer of a photoconductive composition containing:

(a) a photoconductor;

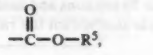
(b) a sensitizing dye represented by general formula (I) or (II):



-continued



wherein R^0 and R^1, which may be the same or different, each represents an alkyl group, a hydroxyalkyl group, an alkoxyalkyl group, an aralkyl group, a carboxyalkyl group, a carboxylatoalkyl group linked to an alkali metal cation, a sulfoalkyl group, or a sulfonatoalkyl group linked to an alkali metal cation; R^2 and R^3 each represents a hydrogen atom, or an alkyl group having 1 to 5 carbon atoms; R^4 represents a hydrogen atom, a halogen atom, a hydroxy group, a carboxy group, an alkyl group having 1 to 5 carbon atoms, a substituted or unsubstituted aryl group, or an acyloxy group shown by



wherein R^5 represents an alkyl group having 1 to 5 carbon atoms, a phenyl group, or a substituted phenyl group; Z^0 and Z^1 each represents a 5-membered or 6-membered heterocyclic ring or an atomic group necessary for forming a condensed ring including a 5-membered or 6-membered heterocyclic ring; Z^2 and Z^3 each represents a 3,3-dialkylindole ring or an atomic group necessary for forming a 3,3-dialkylbenzo[e]indole ring; m and n each is 0 or 1; and $X^\ominus$ represents an acid anion; and

(c) a film-forming high molecular weight binder.

4,362,801

COPPER PHTHALOCYANINE PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY WITH BINDER AND AN OXADIAZOLE

Teruo Yagishita, Yokohama; Seiji Okada, Kawasaki; Toshiaki Narusawa, and Hirofumi Okuyama, both of Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 9, 1981, Ser. No. 310,277

Claims priority, application Japan, Oct. 16, 1980, 55-144988

Int. Cl.³ G03G 5/06

U.S. Cl. 430—83 **2 Claims**

1. A photosensitive material for electrophotography, which comprises copper phthalocyanine as a photoconductor, 2,5-bis(4'-diethylaminophenyl)-1,3,4-oxadiazole as a charge transport material and a binder resin in which said photo-conductor and charge transport material are dispersed, wherein the content of the binder resin is 50 to 70% by weight based on the total amount of the photosensitive material and the weight ratio of copper phthalocyanine to 2,5-bis(4'-diethylaminophenyl)-1,3,4-oxadiazole is in the range of from 2.5 to 6.5.

4,362,802

POWDERY DEVELOPING MATERIAL FOR ELECTROPHOTOGRAPHIC REPRODUCTION

Susumu Tanaka, Sakai; Koji Nagai, and Sanzi Inagaki, both of Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 18,677, Mar. 8, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,593
Claims priority, application Japan, Mar. 17, 1978, 53-31204
Int. Cl.³ G03G 9/14
U.S. Cl. 430—106.6 4 Claims

1. A dry developing powder composition for use in a rotating magnetic brush developing apparatus consisting essentially of (A) 85 to 98 wt% of a magnetic toner capable of functioning as a developer comprising a mixture of a styrene-acrylic resin, magnetite in a finely divided state, and a coloring agent; and (B) 2% to 15% of a non-magnetic toner comprising a mixture of a styrene-acrylic resin and a coloring agent, said percentages being based on the total weight of the composition, said magnetic toner (A) and non-magnetic toner (B) being produced by mixing together the components making up each individual mixture (A) and (B), kneading the mixture by use of a heating roll, cooling the mixture and pulverizing each of said magnetic toner mixtures (A) and non-magnetic toner (B) thus-produced so that said magnetic toner has an average particle size within the range of 35 to 50 microns and said non-magnetic toner has an average particle size within the range of 5 to 30 microns.

4,362,803

ONE-COMPONENT TYPE MAGNETIC DEVELOPER FOR DEVELOPMENT AND TRANSFER OF POSITIVELY CHARGED IMAGES

Nobuhiro Miyakawa, Suita, and Takashi Teshima, Amagasaki, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 8, 1981, Ser. No. 223,264
Claims priority, application Japan, Jan. 16, 1980, 55-2606
Int. Cl.³ G03G 13/09
U.S. Cl. 430—122 4 Claims

1. In an electrostatic photographic reproduction process which includes the steps of forming a positively charged latent image on a photosensitive plate having a p-type photoconductive layer on an electrically conductive substrate, contacting a magnetic brush of a dry one-component magnetic developer with the surface of the plate carrying the latent image thereon to form a visable image of the developer, contacting the developer image with a transfer sheet and applying corona discharge with the same polarity as that of the electrostatic latent image to transfer the developer image onto the transfer sheet, and fixing the transferred image on the transfer sheet, the improvement comprising using as said magnetic brush a dry one-component magnetic developer which comprises a finely divided magnetic material dispersed in a medium, said medium consisting essentially of (A) a vinyl aromatic polymer or acrylic polymer in an amount of 45 to 95% by weight based on the magnetic material, (B) an aliphatic carboxylic acid or metal salt thereof having a total carbon number (inclusive of the carbon atom of the carboxyl group) of at least 14 per carboxyl group in an amount of 0.2 to 4% by weight based on said magnetic material and (C) a negative charge controlling agent consisting of an alcohol-soluble complex salt azo dye containing chromium, iron or cobalt in an amount of 0.5 to 5% by weight based on said polymer, said magnetic material being triiron tetroxide having a bulk density of at least 0.42 g/ml, a number average maximum size of at least 0.35 μm as measured by an electron microscope and a maximum size/minimum size ratio of 1.0 to 5.5.

4,362,804

METHOD OF TONER TRANSFER WITH PULSE BIAS

Phillip E. Staples, Warradale, Australia, assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Jun. 3, 1981, Ser. No. 269,775
Claims priority, application Australia, Jun. 3, 1980, PE3859
Int. Cl.³ G03G 13/16
U.S. Cl. 430—126 13 Claims

1. A method of electrically transferring an image deposit formed from a liquid developer comprising electroscopic toner particles dispersed in an electrically insulating carrier liquid, from a smooth image-bearing photoconductor surface of a recording member to a smooth surface of an image-receiving member having a non-conductive side and in which the image-bearing surface of the recording member is placed into contact with the image-receiving surface of the non-conductive side of the said image-receiving member, the image-recording and image-receiving members being impervious to the carrier liquid of the liquid developer and an electrical transfer bias voltage is applied through the interface between the said surfaces in a direction normal to the said surfaces, characterised in that the said electrical transfer bias voltage is applied intermittently by successive pulses of opposite polarity and with successively increasing voltage gradually progressively to remove excess liquid from the interfaced surfaces, while the final pulse being of an electrical polarity and magnitude sufficient to transfer the said image deposit to the said receiving member.

4,362,805

METHOD FOR MANIPULATING AND TRANSPORTING IMAGE MEDIA

Robert M. Landsman, Annandale, Va., assignor to Logescan Systems Inc., Springfield, Va.

Division of Ser. No. 972,628, Dec. 22, 1978, Pat. No. 4,262,594. This application Jul. 7, 1980, Ser. No. 166,434
Int. Cl.³ B41B 15/32; G03F 7/02
U.S. Cl. 430—200 10 Claims

1. A method of transporting an image receiving medium and forming it to a precise curvature, and exposing an image thereon, said method comprising:

(a) positioning an image receiving medium on the surface of a flat flexible carrier, said carrier defining a pair of reference strips,

(b) engaging said flexible carrier in a gripping means attached to a pair of spaced cylindrical discs, said discs defining a precise cylindrical reference plane therebetween,

(c) drawing a vacuum through said carrier to exhaust the air from between said image receiving medium and the surface of said carrier,

(d) rotating said discs sufficiently to draw said flexible carrier around the periphery of said discs with each of said reference strips contacting one of said discs, said strips also defining a neutral axis of curvature for said combined carrier and image receiving medium whereby said image receiving medium is supported by said carrier in a precise cylindrical plane,

(e) exposing said image receiving medium to a scanning beam of modulated radiant energy focussed on said medium from within said precise cylindrical reference plane, to record an image on said medium.

4,362,806

IMAGING WITH NONPLANAR SUPPORT ELEMENTS

Keith E. Whitmore, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 8,819, Feb. 2, 1979, abandoned. This application Sep. 8, 1980, Ser. No. 184,714
Int. Cl.³ G03C 1/76, 5/54
U.S. Cl. 430—202 120 Claims

1. In an element comprising a support means having first and second major surfaces and, on said support means, radiation-

sensitive imaging means capable of undergoing as a function of at least one of photographic exposure and processing a change in the optical density or mobility of said imaging means, said imaging means being comprised of an imaging dye or imaging dye precursor which permits visibly detectable lateral image spreading to occur when said imaging means is coated as a continuous layer on a planar support surface,

the improvement comprising

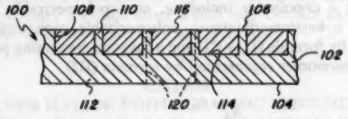
said support means defining microvessels which individually open toward one of said first and second major surfaces,

a plurality of the microvessels opening toward said first major surface of said support means to form a predetermined, ordered planar array,

next adjacent of the microvessels forming the planar array being laterally spaced by less than the width of adjacent microvessels opening toward either of said first and second major surfaces, and

said imaging dye or imaging dye precursor of said imaging means being present at least in part in a plurality of the micro-vessels of said planar array.

42. In a silver halide photographic element comprising a support having first and second major surfaces and, on said support, radiation-sensitive means which produces visually detectable lateral image spreading in translating an imaging exposure pattern to a viewable form, said radiation-sensitive means including a first component comprised of a radiation-sensitive silver halide emulsion of the developing out type capable of being developed in an aqueous alkaline processing solution in which said radiation-sensitive silver halide emulsion contains a development inhibitor releasing coupler and a second component comprised of a surface fogged silver halide



emulsion for producing a viewable image in response to silver halide development,

the improvement comprising

said support being comprised of a plurality of lateral walls and an underlying portion defining a predetermined, ordered planar array of reaction microvessels which open toward one major surface of said support, said microvessels having widths in the range of from 7 to 100 microns and depths in the range of from 5 to 20 microns,

at least one of said first and second components being present in said reaction microvessels, and

said support being substantially impermeable to the aqueous alkaline processing solution and said lateral walls providing a barrier to radiation scattering between adjacent reaction microvessels, so that lateral image spreading is limited.

43. In a photographic element comprising a support means having first and second major surfaces and, on said support means, radiation-sensitive imaging means for translating an imaging exposure pattern into a viewable form, said imaging means being comprised of at least one component which permits visibly detectable lateral image spreading to occur when said imaging means is coated on a planar support surface, said one component being capable of undergoing as a function of at least one photographic exposure and processing a change in optical density or mobility,

the improvement comprising

said support means defining first and second planar arrays of microvessels which open toward said first and second major surfaces respectively of said support means, next adjacent of the microvessels being laterally spaced by less than the width of adjacent microvessels opening toward either major surface,

at least said one component being coated in the microvessels of at least said first planar array, and

said support means providing a barrier between adjacent microvessels of said first planar array to limit lateral image spreading.

4,362,807

PHOTOMASK-FORMING PHOTOGRAPHIC MATERIAL AND METHOD FOR PRODUCING PHOTOMASK USING SAME

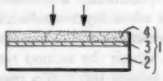
Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 513,439, Oct. 9, 1974, abandoned. This application Apr. 19, 1977, Ser. No. 788,945

Claims priority, application Japan, Oct. 9, 1973, 48-113629

Int. Cl.[3] **G03C** *5/00*

U.S. Cl. 430—276 **2 Claims**



1. A photomask-forming photographic material which consists of a transparent support which has thereon (1) an etchable masking layer, (2) a subbing layer comprising a thin layer of polyvinyl acetate located directly on the masking layer, and (3) a silver halide emulsion layer located directly on the subbing layer and said masking layer comprises a layer of a metal, a metal oxide, a semi-metal or a chalcogen glass having a thickness ranging from 0.05 to 3 microns and not transmitting ultraviolet light and the subbing layer being by definition a layer the sole function of which is to ultimately adhere the silver halide emulsion layer to the masking layer.

4,362,808

PRINT SCREEN STENCIL AND ITS PRODUCTION

Jacob A. Otthofer, Jr., Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Division of Ser. No. 60,456, Jul. 25, 1979, Pat. No. 4,286,518. This application Mar. 9, 1981, Ser. No. 241,697

Int. Cl.[3] **G03C** *5/00*

U.S. Cl. 430—308 **2 Claims**

1. A method of producing a print screen stencil for printing with corrosive printing compositions comprising:

(a) coating an open mesh print screen fabric with a photoactive plastisol resist coating composition comprising a vinyl resin, a vinyl resin plasticizer, a cross-linking acrylic monomer, and a photoinitiator;

(b) imagewise exposing the coated screen fabric to actinic light through a film positive to cross-link the acrylic monomer in those areas of the coating struck by actinic light;

(c) treating the exposed coated screen fabric to remove the plastisol resist coating composition from the non-actinic light struck areas and thereby form open mesh areas which will permit the passage of a printing composition; and,

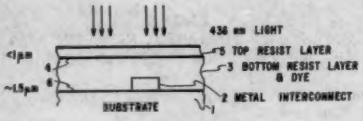
(d) heating the treated screen fabric to fuse the plastisol resist coating composition which remains on the screen fabric in the actinic light struck areas and thereby form filled or closed mesh areas which will prevent the passage of a printing composition.

4,362,809

MULTILAYER PHOTORESIST PROCESS UTILIZING AN ABSORBANT DYE

Mung Chen, Los Altos; William R. Trutna, Jr., Palo Alto; Michael P. C. Watts, Sunnyvale, all of, CA; Keith G. Bartlett, and Gary Hillis, Ft. Collins, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 30, 1981, Ser. No. 248,761
Int. Cl.³ G03F 7/02; G03C 1/76
U.S. Cl. 430—312 8 Claims



1. An improved process of photoetching a substrate, of the portable-conformable-mask type wherein a first resist is deposited on the substrate to produce a bottom resist layer having a substantially planar top surface, a second resist is deposited as a top resist layer producing a multilayer substrate coating having the bottom resist layer sandwiched between the substrate and the top resist layer, the top resist layer is exposed to light in a range in which the second resist is insensitive, said light having been passed through a mask to expose only selected portions of the top resist layer, the top layer is developed to produce a portable-conformable-mask, and the layers of the substrate coating other than the top resist layer are processed to replicate the pattern of this portable-conformable-mask into such layers, the improvement comprising:

selecting a dye which strongly absorbs light at the wavelengths used to expose the top resist:

dissolving the dye in a layer of resist which is sandwiched between the substrate and the top layer; and

replicating the pattern of the portable-conformable-mask into the layer of resist containing the dye by exposing this layer through an associated portable-conformable-mask which has been produced in a layer of resist above the layer of resist containing the dye and then developing the layer of resist containing the dye, said exposure of the layer of resist containing the dye being at a wavelength at which the associated portable-conformable-mask is opaque and at which the layer containing the dye is photosensitive.

4,362,810

METHOD FOR FORMING A CYAN DYE IMAGE

Yasushi Usagawa, Hino; Wataru Fujimatsu, Hachioji; Osamu Sasaki, Hino, and Katsumi Matsuura, Hachiaji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jan. 9, 1981, Ser. No. 223,696
Claims priority, application Japan, Jan. 11, 1980, 55-2305
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ G03C 7/00
U.S. Cl. 430—384 6 Claims

1. A method for forming a cyan dye image which method consists developing an imagewisely exposed silver halide emulsion layer with an aromatic primary amine color developing agent in the presence of a 2,5-diacylaminophenol cyan coupler containing a substituted alkylsulfonylamino terminal moiety or a substituted alkylaminosulfonyl terminal moiety in the 2- or 5-position of the molecule.

4,362,811

PROCESSING SOLUTION COMPOSITION FOR SILVER COMPLEX DIFFUSION TRANSFER PROCESS

Shigeru Iguchi, and Shozi Oka, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Ltd., Tokyo, Japan

Continuation of Ser. No. 102,104, Dec. 7, 1979, abandoned. This application Jul. 10, 1981, Ser. No. 282,152
Claims priority, application Japan, Dec. 11, 1978, 53-153369
Int. Cl.³ G03C 5/54, 5/38, 5/30
U.S. Cl. 430—455 15 Claims

1. A silver complex diffusion transfer processing solution composition containing substantially no developing agent which comprises:

(1) an alkaline substance,

(2) an alkali metal sulfite,

(3) a solvent for silver halides which is other than sulfite,

(4) 1.7×10^{-3} to 1.7×10^{-2} mole/liter of a bromide,

(5) a content of potassium ion of 2.0 to 12.0 mol % based on the total cations of the salts contained in the composition, and

(6) water.

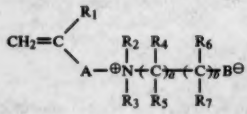
4,362,812

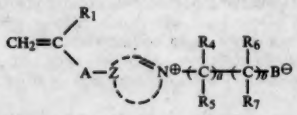
PHOTOGRAPHIC MATERIALS

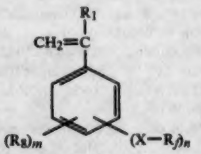
Junji Minamizono; Shinzo Kishimoto; Shigeki Yokoyama, all of Kanagawa, and Takayuki Inayama, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 10, 1981, Ser. No. 282,349
Claims priority, application Japan, Jul. 10, 1980, 55/94406
Int. Cl.³ G03C 1/76
U.S. Cl. 430—528 15 Claims

1. A silver halide photographic material comprising a support and at least one layer of the photographic material containing a copolymer including, as copolymerizable components, a betaine-containing polymerizable monomer represented by formula (I) or (II) and a fluorine-containing polymerizable monomer represented by formula (III)


(I)


(II)


(III)

wherein

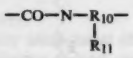
R_1 represents hydrogen, a halogen atom, an alkyl group, or a substituted alkyl group;

R_2, R_3, R_4, R_5, R_6, and R_7 each represents hydrogen, an alkyl group, or a substituted alkyl group;

R_8 represents a hydroxy group, a nitro group, a halogen atom, a substituted or unsubstituted alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted acyl group having from 1 to 6 carbon atoms, or when $m>1$ said R_8s may combine with each other to form a ring;

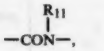
A represents a chemical bond, a substituted or unsubstituted alkylene group having from 1 to 8 carbon atoms, a substi-

tuted or unsubstituted aralkylene group having from 6 to 11 carbon atoms, —COO—R_{10}—, —O—CO—R_{10}—,

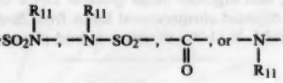


wherein R_{10} represents a chemical bond, an alkylene group having from 1 to 8 carbon atoms, an aralkylene group having from 6 to 11 carbon atoms or an arylene group; and R_{11} represents a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms which may be substituted, or an atomic group necessary for forming together with R_2, R_3 or R_6 a heterocyclic ring,

X represents —R_{12})$_x$Y—R_{13})$_y$W where Y and W represents —O—, —COO—, —OCO—,



—NCO—, —S—, —SCO—,



in which R_{11} has the same meaning as defined above, R_{12} and R_{13} represent a chemical bond, an alkylene group having from 1 to 8 carbon atoms; an aralkylene group having from 6 to 11 carbon atoms, or an arylene group; and x and y are 0 or 1; and

Z represents a 5-membered or 6-membered ring including a quaternary nitrogen atom which may contain an oxygen atom or a non-quaternary nitrogen atom.

4,362,813

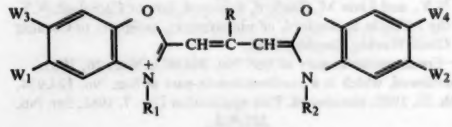
SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Yuji Mihara; Tadashi Ikeda; Haruo Takei; Masaki Okazaki, and Yasuo Aotsuka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1981, Ser. No. 278,031
Claims priority, application Japan, Jun. 30, 1980, 55-89618
Int. Cl.³ G03C *1/40, 1/18*
U.S. Cl. 430—550 **30 Claims**

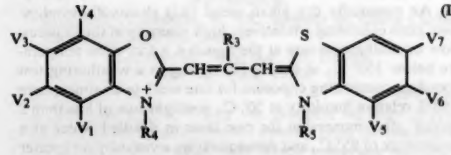
1. A light-sensitive silver halide photographic emulsion comprising a sensitizing dye represented by formula (I) and a sensitizing dye represented by formula (II):

(I)



$(X)_{n-1}$

(II)



$(X_1)_{m-1}$

wherein

R_1 and R_2 are each a substituted or unsubstituted alkyl group, and at least one of R_1 and R_2 is a sulfoalkyl group or a carboxyalkyl group;

R is an alkyl group or an aralkyl group;

W_1, W_2, W_3 and W_4 are each a hydrogen atom, a halogen atom, an aryl group, an alkyl group, a substituted alkyl group, an alkoxy group, an alkoxycarbonyl group, a carboxy group or a hydroxy group, and W_1 and W_2 are not phenyl groups at the same time;

X is an acid anion;

n is 1 or 2, and when the sensitizing dye forms an intramolecular salt, n is 1;

R_4 and R_5 are each a substituted or unsubstituted alkyl group, and at least one of R_4 and R_5 is a sulfoalkyl group or a carboxyalkyl group;

R_3 is an ethyl group, a propyl group or an aralkyl group;

V_1, V_2, V_3, V_4, V_5, V_6 and V_7 are each a hydrogen atom, a halogen atom, an aryl group, an alkyl group, a substituted alkyl group, an alkoxy group, an alkoxycarbonyl group, a carboxy group or a hydroxy group, and V_1 and V_2, V_2 and V_3, V_3 and V_4, V_5 and V_6 or V_6 and V_7 may combine together to form a benzene ring;

X_1 is an acid anion;

m is 1 or 2, and when the sensitizing dye forms an intramolecular salt, m is 1; and

the number of carbon atoms contained in the alkyl group or alkyl radical is 1 to 4 wherein the sensitizing dyes of formula (II) and formula (I) are present in a molar ratio of 1:2 to 10:1.

12. The light-sensitive silver halide photographic emulsion as claimed in claim 1 further comprising a color coupler.

4,362,814

PROCESS FOR PREPARING 1-CARBA-2-PENEM-3-CARBOXYLIC ACID

Richard B. Sykes, Belle Mead; Jerry S. Wells, Ringoes, and William L. Parker, Pennington, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 18, 1981, Ser. No. 332,056
Int. Cl.³ C12P *17/18*
U.S. Cl. 435—119 **2 Claims**

1. A process for the preparation of 1-carba-2-penem-3-carboxylic acid which comprises culturing aerobically Serratia sp. SC 11, 482 A.T.C.C. No. 39006 in a culture medium containing assimilable carbon and nitrogen sources until 1-carba-2-penem-3-carboxylic acid is accumulated, and then recovering the 1-carba-2-penem-3-carboxylic acid from the medium.

4,362,815

PROCESS FOR THE PREPARATION OF DEFECTIVE MUTANTS OF MICROORGANISMS

Frank F. Hill, Mettmann-Obschwarzbach; Joachim Schindler, Hilden; Rolf Schmid, Dusseldorf; Wolfgang Preuss, Monheim, and Alfred Struve, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 29,415, Apr. 12, 1979, Pat. No. 4,320,195. This application Mar. 7, 1980, Ser. No. 128,223
Claims priority, application Austria, Mar. 7, 1979, 1709/79
Int. Cl.³ C12N *15/00, 1/20*; C12P *33/16*
U.S. Cl. 435—172 **12 Claims**

1. A process for the production of biologically pure microorganism defective mutants which are capable of producing 17-C-steroid-alpha-propionic acid compounds including 3-oxo-pregna-4-ene-20 carboxylic acid and 3-oxo-1,4-diene-20-carboxylic acid and mixtures thereof from 17-C-side chain steroid substrates by selective side chain degradation under aerobic conditions without substantial steroid ring degradation in the absence of ring degradation inhibitors, where the biologically pure microorganism defective mutants are obtained from a population of mutants containing undesired accompanying mutant strains wherein

(a) a microorganism wild strain which is capable of growing

on sterol compounds as a sole source of carbon is isolated and cultivated,

(b) the wild strain is treated by a known mutation treatment, to give the mutant population,

(c) the mutant population obtained from (b) is cultivated on separation medium on which the mutants capable of degrading the sterol compounds only to the C-17-steroid-alpha-propionic acid do not substantially grow, and

(d) the mutant micrioorganisms capable of growing in (c) are killed off due to their growth or through the use of antibiotics or radioactive media thereby giving the biologically pure defective mutant strain and,

(e) the biologically pure mutant strains that do not substantially grow are isolated and preserved.

4,362,816

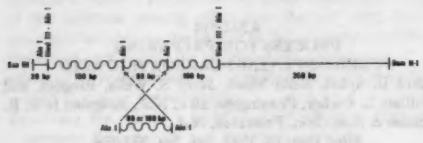
HYBRID PLASMID AND PROCESS OF MAKING SAME

Fritz Reusser, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 13, 1980, Ser. No. 206,210

Int. Cl.³ C12N *15/00, 1/20, 1/00;* C12R *1/19*

U.S. Cl. 435—172 **6 Claims**



3. A process for preparing hybrid plasmid pUC1031 which comprises:

(a) linearizing plasmid pBR322 with HindIII to obtain linear plasmid DNA;

(b) obtaining chromosomal DNA from Streptomyces sp. 3022a NRRL B-11441

(c) digesting said chromosomal DNA with HindIII; and

(d) ligating said digested linear plasmid DNA from pBR322 and said digested chromosomal DNA from Streptomyces sp. 3022a NRRL B-11441, to obtain hybrid plasmid pUC1031.

4,362,817

HYBRID PLASMID AND PROCESS OF MAKING SAME

Fritz Reusser, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 2, 1981, Ser. No. 239,258

Int. Cl.³ C12N *15/00, 1/20, 1/00;* C12R *1/19*

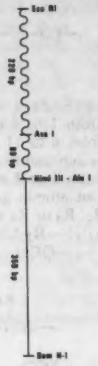
U.S. Cl. 435—172 **6 Claims**

3. A process for preparing hybrid plasmid pUC1060 which comprises:

(a) linearizing plasmid pBR322 with EcoR, and HindIII to obtain linear plasmid DNA;

(b) obtaining chromosomal DNA from *Streptomyces* sp. 3022a NRRL B-11441.

(c) digesting said chromosomal DNA; with Eco R_1 and HindIII and



(d) ligating said digested linear plasmid DNA from pBR322 and said digested chromosomal DNA from *Streptomyces* sp. 3022a NRRL B-11441, to obtain hybrid plasmid pUC1060.

4,362,818

ACYLATION OF *MUCOR PUSILLUS* MICROBIAL RENNET ENZYME

Dennis A. Cornelius, Elkhart, Ind.; Clifford V. Asmus, Niles, Mich., and Moshe M. Sternberg, Oakland, Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 17, 1981, Ser. No. 235,103

Int. Cl.³ C12N *9/58, 9/96;* A23C *19/032*

U.S. Cl. 435—223 **2 Claims**

1. A method for increasing the milk coagulating activity of microbial enzyme obtained from *Mucor pusillus* micro-organisms comprising acylating in an aqueous medium said enzyme by contacting the *Mucor pusillus* microbial rennet enzyme at a temperature of about 0° to 25° C. and a pH of about 5 10 with from 0.1 to 2 percent (w/v) based on enzyme volume of an acylating agent selected from the group consisting of maleic, citraconic, phthalic, cis-1,2-cyclohexanedicarboxylic, 1,2,4-benzenetricarboxylic, homophthalic, 3-nitrophthalic, bromomaleic and dichloromaleic anhydride for a time sufficient to obtain said desired increase.

4,362,819

MOLDABLE FLUOROALUMINOPHOSPHATE GLASSES

Anthony R. Olszewski, Bath; Paul A. Tick, Corning, both of N.Y., and Leon M. Sanford, deceased, late of Campbell, N.Y. (by Michele R. Sanford, administratrix), assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 248,002, Mar. 26, 1981, abandoned, which is a continuation-in-part of Ser. No. 124,924, Feb. 26, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 327,915

Int. Cl.³ C03C *3/16, 3/18*

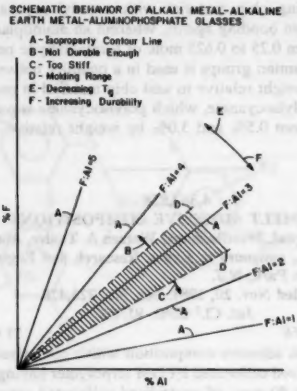
U.S. Cl. 501—44 **8 Claims**

1. An essentially dry alkali metal (R^1) aluminofluorophosphate glass exhibiting a relatively high viscosity at the liquidus, a low crystallization rate at the liquidus, a transition temperature below 350° C., at least a "B" rating in a weathering test procedure comprising exposure for one week in an atmosphere of 98% relative humidity at 50° C., a weight loss of less than 2 mg/cm^2 after immersion for one hour in distilled water at a temperature of 95° C., and demonstrating a viscosity no greater than about 10^9 poises at temperatures below 400° C., thereby displaying the capability of being molded at temperatures below 400° C. into complex shapes, which consists essentially, as analyzed on an atomic basis, between about $R^1AlP_{2.0}F_{2.0}O_6$

and $R^1_{3.75}AlP_{3.0}F_{4.0}O_9$, and wherein said components are present in the following atomic ratios:

F:Al >2 but <4
P:Al >2 but <3
R^1:P >0.5 but <1.25

5. An essentially dry alkali metal (R^1) aluminofluorophosphate glass also containing at least one divalent metal oxide (R^2) selected from the group of PbO, ZnO, CdO, MgO, CaO, SrO, and BaO which exhibits a relatively high viscosity at the liquidus, a low crystallization rate at the liquidus, a transition temperature below 350° C., at least a "B" rating in a weather-



ing test procedure comprising exposure for one week in an atmosphere of 98% relative humidity at 50° C., a weight loss of less than 2 mg/cm² after immersion for one hour in distilled water at a temperature of 95° C., and demonstrates a viscosity no greater than about 10^9 poises at temperatures below 400° C., thereby displaying the capability of being molded at temperatures below 400° C. into complex shapes, which consists essentially, as analyzed on an atomic basis, between about $R^1_{0.75}R^2_{0.25}AlPF_2O_4$ and $R^1_{1.25}R^2_{2.5}AlP_{5.5}F_5O_{16}$, and wherein said components are present in the following atomic ratios:

F:Al	>2 but <5
P:Al	>1 but <5.5
R^1:P	>0.25 but <1.25
Pb:Al	<1.25
Zn:Al	<1.25
Mg and/or Ca and/or Sr and/or Ba and/or Cd:Al	<1.25
Pb and/or Zn + (Mg and/or Ca and/or Sr and/or Ba and/or Cd):Al	>0.25 but <2.5
(R^1 + R^2):P	<1

4,362,820
PROCESS FOR PRODUCING ETHYLENE GLYCOL AND METHANOL

Leonard Kaplan, Dunbar, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1981, Ser. No. 278,900
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—700 **15 Claims**

1. The process for making the products ethylene glycol, methanol, and derivatives thereof directly from the reaction of hydrogen and carbon monoxide which comprises reacting a mixture comprising oxides of carbon and hydrogen in the homogeneous liquid phase containing an effective amount of a cobalt-containing compound and an organosilicon compound having at least one hydrogen bonded to silicon wherein said process is carried out for a period of time at a temperature and pressure which cause the carbon monoxide and hydrogen to react to produce, ethylene glycol, methanol, and derivatives thereof.

4,362,821
PROCESS FOR PREPARING ALKANOLS FROM SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,194
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—700 **24 Claims**

1. A process for making alkanols which comprises reacting a mixture of CO and H_2 at a pressure of about 500 psig or greater and at a temperature of at least 150° C. in the presence of a catalyst system comprising a ruthenium-containing compound, a material selected from the group consisting of a rhenium-containing compound and a manganese-containing compound and a quaternary phosphonium or ammonium base or salt in the presence of an inert, oxygenated solvent.

4,362,822
PROCESS FOR PREPARING ACETIC AND PROPIONIC ACIDS AND THEIR ESTERS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

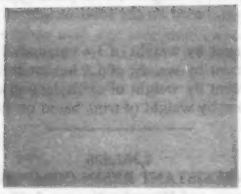
Filed Oct. 29, 1981, Ser. No. 316,196
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—700 **32 Claims**

1. A process for making acetic and propionic acids and their esters which comprises contacting a mixture of CO and H_2 at a pressure of about 500 psig or greater and at a temperature of at least about 150° C. with a catalyst system comprising a ruthenium-containing compound and a material selected from the group consisting of a halogen-containing titanium salt and a halogen-containing zirconium salt dispersed in a low melting quaternary phosphonium or ammonium base or salt.

4,362,823
METHOD AND COMPOSITION FOR CLOSED CELL FOAM FORMATION

David G. Wernsing, Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Aug. 21, 1981, Ser. No. 295,057
Int. Cl.³ C08G *18/14, 18/32*
U.S. Cl. 521—116 **4 Claims**



1. A process for producing rigid foam from the reaction of a polyol and an organic polyisocyanate including the step of incorporating into at least one of said polyol and said polyisocyanate an effective amount of an ethoxylated (propoxylated propylene glycol) to sufficiently emulsify the reactants during mixing to produce small, uniform cell sizes in said rigid foam produced thereby, said ethoxylated (propoxylated propylene glycol) having an HLB value of less than about 4 and incapable of producing, on standing, a visible reaction product such as a skin or other indications of solids formation, gas evolution or

an increase in the viscosity of said isocyanate when mixed with said polyisocyanate independently of said polyol.

4,362,824

METHOD FOR MAKING RIM POLYURETHANE ELASTOMERS USING AS THE CATALYST SYSTEM DIMETHYLETHANOLAMINE, DIBUTYLTIN DILAURATE AND AN ALKYLTIN MERCAPTIDE

Richard J. G. Dominguez, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 29, 1981, Ser. No. 268,528

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—118 **4 Claims**

1. In a method for making a polyurethane elastomer of significantly improved properties wherein an aromatic polyisocyanate, a polyol of above about 500 equivalent weight, a chain extending agent comprising a low molecular weight active hydrogen containing compound of at least 2 functionality and a catalyst system is injected via a RIM machine into a mold cavity of the desired configuration the improvement which comprises

using as the catalyst system dimethylethanolamine, dibutyltin dilaurate and an alkyltin mercaptide.

4,362,825

PROCESS FOR THE PREPARATION OF FLEXIBLE POLYURETHANE FOAMS WITH IMPROVED RESISTANCE TO HYDROLYSIS AND GOOD DIE CUTABILITY

Herbert Grabhoefer, Ludwigshafen, and Peter Weyland, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 24, 1981, Ser. No. 334,157

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1981, 3100523

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—172 **4 Claims**

1. A process for the preparation of flexible polyurethane foams by reacting organic polyisocyanates, polyhydroxyl compounds in the presence of catalysts and blowing agents as well as optionally chain extenders, auxiliaries, and additives wherein liquid polyester polyols having hydroxyl numbers of 40 to 80 and molecular weights of 1500 to 5000 are used as polyhydroxyl compounds said polyols produced by the polycondensation of organic dicarboxylic acids with polyol mixture A, based on the total weight of polyol consisting of:

5 to 50 percent by weight of 1,4 butanediol
20 to 60 percent by weight of 1,5 pentanediol
8 to 35 percent by weight of 1,6-hexanediol
2 to 15 percent by weight of triol, and
0 to 65 percent by weight of diethylene glycol or

polyol mixture B, based on the total weight of polyol consisting of:

10 to 50 percent by weight of 1,4 butanediol
15 to 45 percent by weight of 1,6 hexanediol
15 to 65 percent by weight of diethylene glycol, and
2 to 25 percent by weight of triol, based on the total weight.

4,362,826

HEAT-RESISTANT RESIN COMPOSITION

Kazuya Yonezawa, and Hirosaku Nagano, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1981, Ser. No. 263,512

Claims priority, application Japan, May 17, 1980, 55-65529

Int. Cl.³ C09D *3/70*

U.S. Cl. 525—426 **10 Claims**

1. A heat-resistant resin composition characterized in that the composition comprises a varnish of polyamide acid which is the precursor of polyimide heat-resistant resin having active hydrogen in the molecule and a bismaleimide compound or a derivative thereof admixed with the varnish.

4,362,827

MANUFACTURE OF CHIPBOARD

Arie Tinkelenberg, Limbricht; Henricus W. L. M. Vaessen, Wijnandsrade, and Kwai W. Suen, Geleen, all of Netherlands, assignors to Methanol Chemie Nederland V.O.F., Delfzijl and Stamicarbon B.V., Geleen, both of, Netherlands

Filed Sep. 3, 1980, Ser. No. 183,409

Claims priority, application Netherlands, Sep. 11, 1979, 7906751

Int. Cl.³ C08L *1/02, 61/24, 61/34*

U.S. Cl. 524—9 **10 Claims**

1. A method for manufacturing chipboard or shaped objects by hardening at elevated temperatures and pressures lignocellulose-containing chip material with a polyisocyanate and aminoplast resin bonding agents, wherein an aminoplast resin having between 0.25 to 0.625 mole of formaldehyde per mole equivalent of amino groups is used in a quantity between 3% and 14% by weight relative to said chip material in combination with a polyisocyanate, which polyisocyanate is used in a quantity between 0.5% and 3.0% by weight relative to said chip material.

4,362,828

HOT MELT ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield, and Warren A. Thaler, Aberdeen, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 20, 1981, Ser. No. 323,420

Int. Cl.³ C08L *95/00*

U.S. Cl. 524—66 **11 Claims**

1. A hot melt adhesive composition which comprises:

(a) a neutralized sulfonated EPDM terpolymer having about 5 to about 50 meq. of neutralized sulfonated groups per 100 grams of said neutralized sulfonated EPDM terpolymer;

(b) about 25 to about 250 parts by weight of a hydrocarbon resin of a petroleum or coal tar distillate per 100 parts by weight of said neutralized sulfonated EPDM terpolymer; and

(c) about 25 to about 250 parts by weight of a neutralized sulfonated 1,2-syndiotactic polybutadiene resin per 100 parts of said sulfonated EPDM terpolymer, said sulfonated 1,2-syndiotactic polybutadiene resin having about 5 to about 50 meq. of neutralized sulfonate groups per 100 grams of said neutralized sulfonated 1,2-syndiotactic polybutadiene resin.

4,362,829

POLYCARBONATES STABILIZED WITH SULFOLANE DERIVATIVES

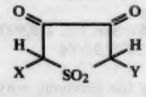
Stephen M. Cooper; Sheldon J. Shafer, both of Pittsfield, Mass., and John A. Tyrell, Mt. Vernon, Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Aug. 26, 1981, Ser. No. 296,542

Int. Cl.³ C08K *5/45*

U.S. Cl. 524—84 **5 Claims**

1. A composition which comprises an aromatic carbonate polymer in admixture with an effective amount of a thermal stabilizing compound of the formula



Formula I

wherein X and Y are the same or different and are phenyl or naphthyl unsubstituted or substituted with one to three members of the group consisting of alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, chlorine and bromine.

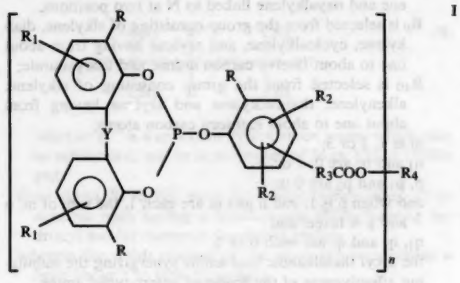
4,362,830

HINDERED BIS-PHENOL PHENYL PHOSPHITES AND SYNTHETIC RESIN COMPOSITIONS HAVING ENHANCED STABILITY TO HEAT AND LIGHT

Motonobu Minagawa, Koshigaya, and Yutaka Nakahara, Iwatsuki, both of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Dec. 29, 1980, Ser. No. 220,406
Claims priority, application Japan, Jan. 10, 1980, 55-1542
Int. Cl.[3] C08K 5/52; C07D 251/34, 69/90
U.S. Cl. 524—101 26 Claims

1. Hindered bis-phenol phenyl phosphites having the structure:



I

wherein:

R is selected from the group consisting of alkyl having from one up to about eighteen carbon atoms; and cycloalkyl having from three up to about twelve carbon atoms, alkaryl and aryl having from six to about eighteen carbon atoms;

R_1 and R_2 are each selected from the group consisting of hydrogen and alkyl having from one to about eighteen carbon atoms; cycloalkyl having from three up to about twelve carbon atoms; alkaryl and aryl having from six to about eighteen carbon atoms;

R_3 is alkylene having from one to about six carbon atoms;

R_4 is selected from the group consisting of monovalent alkyl, cycloalkyl and aralkyl and polyvalent alkylene, cycloalkylene and aralkylene and monovalent and polyvalent 2-ethylene isocyanurate having from one to about eighteen carbon atoms, and from none to three hydroxyl groups;

Y is selected from the group consisting of a direct carbon to carbon bond, thio sulfur—S—; oxy oxygen —O—; alkylidene having from one to about six carbon atoms; and cycloalkylidene having from four to about eight carbon atoms; and

n is, 2, 3 or 4, according to the valence of R_4.

17. A polyvinyl chloride resin composition having improved resistance to deterioration when heated at 350° F., comprising a polyvinyl chloride resin formed at least in part of the recurring group

and having a chlorine content in excess of 40%, where X is either hydrogen or chlorine; and a phosphite in accordance with claim 1.

4,362,831

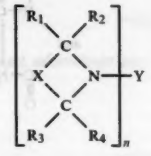
SYNERGISTIC LIGHT AND HEAT STABILIZER COMPOSITIONS FOR SYNTHETIC RESINS AND RESIN COMPOSITIONS CONTAINING THE SAME

Toshio Ohzeki, Urawa; Mitsuo Akutsu, Tokyo, and Takanori Semba, Matsudo, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Dec. 7, 1979, Ser. No. 101,306
Claims priority, application Japan, Dec. 8, 1978, 53-152222
Int. Cl.[3] C08K 5/34, 5/36; C09K 15/10, 15/18
U.S. Cl. 524—102 24 Claims

1. A light and heat stabilizer composition for synthetic resins comprising:

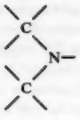
(1) at least one hindered and heterocyclic amine having the formula:



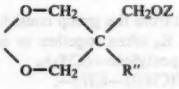
(I)

wherein:

X is a bivalent linking radical including at least one up to four ring carbon atoms completing the ring structure

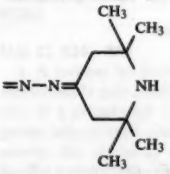


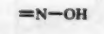
as a heterocyclic ring having from five to seven ring atoms of which at least one is nitrogen and from three to six are carbon; and a substituent selected from the group consisting of Z, O—Z, NH—Z, and

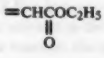


wherein

Z is the residue of an acid selected from the group consisting of carboxylic acids having from one to thirty carbon atoms, carbonic acid and inorganic oxyacids of phosphorus, silicon and boron and R″ is hydrogen or lower alkyl; $=Z_4$ wherein Z_4 is a bivalent group selected from the group consisting of:







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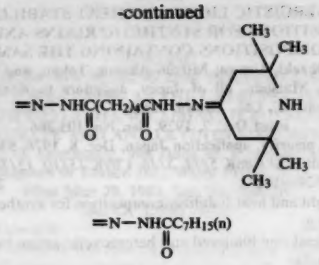
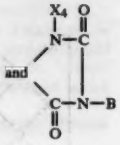
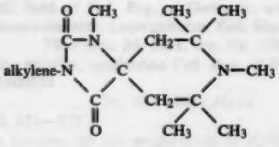




wherein

X_4 is hydrogen or methyl; and

B is selected from the group consisting of alkyl, epoxy alkyl, alkenyl and cycloalkyl having from one to about eighteen carbon atoms, and



in which the alkylene has from one to about ten carbon atoms;

R_1 and R_2 are each selected from the group consisting of lower alkyl, and R_1 and R_2 taken together as pentylene $(CH_2)_5$;

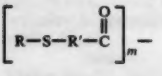
R_3 and R_4 are each selected from the group consisting of lower alkyl and R_3 and R_4 taken together as one of butylene—$(CH_2)_4$, pentylene—$(CH_2)_5$, and $CH_2—C(CH_3)_2—NH—C(CH_3)_2—CH_2—$;

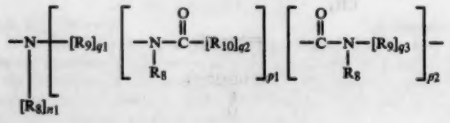
n is 1 or 2; and

when n is 1, Y is selected from the group consisting of hydrogen, O., OH, alkyl, alkenyl, alkynyl, aralkyl and acyl having from one to about thirty carbon atoms; and

when n is 2, Y is selected from the group consisting of alkylene, alkenylene, alkynylene, cycloalkylene and aralkylene having from one to about thirty carbon atoms; together with

(2) at least one alkyl thioalkanoic acid amide having the formula:





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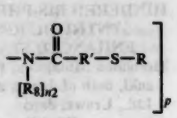


wherein:

R is alkyl having from about four to about fifty carbon atoms;

R' is alkylene having from one to about three carbon atoms;

R_8 is selected from the group consisting of hydrogen, alkyl and aryl having from about one to about eighteen carbon atoms; and when n is 2 and p is 0, bivalent alkylene and oxyalkylene linked to N at two positions;

R_9 is selected from the group consisting of alkylene, dialkylene, cycloalkylene, and arylene having from about one to about twelve carbon atoms; and isocyanurate;

R_{10} is selected from the group consisting of alkylene, alkenylene, thiodialkylene and arylene having from about one to about eighteen carbon atoms;

m is 1, 2 or 3;

n_1 and n_2 are 0, 1 or 2;

p, p_1 and p_2 are 0 or 1;

and when p is 1, and n and m are each 1, the sum of m, n and p is three; and

q_1, q_2 and q_3 are each 0 or 1;

the alkyl thioalkanoic acid amide synergizing the stabilizing effectiveness of the hindered heterocyclic amine.

21. An olefin polymer composition having improved resistance to deterioration comprising an olefin polymer selected from the group consisting of polymers of alpha-olefins having from two to six carbon atoms and polystyrene, and a compound in accordance with claim 1.

4,362,832

THERMOPLASTIC POLYMER/GLASS FIBER/BIS-MALEIMIDE MOLDING COMPOSITIONS

Jean-Louis Locatelli, Vienne, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 72,622, Sep. 5, 1979, abandoned. This application May 29, 1981, Ser. No. 268,152

Claims priority, application France, Sep. 5, 1978, 78 25592

Int. Cl.³ C08L *25/12, 67/02, 77/06*

U.S. Cl. 524—102 **10 Claims**

1. A composition of matter comprising (i) a thermoplastic polymer selected from the group consisting of a styrene polymer, nylon-6 and polyethylene terephthalate; (ii) glass fibers in an amount ranging from 1 to 50% by weight based upon the total weight of the thermoplastic polymer and said glass fiber; and (iii) a bis-maleimide in an amount ranging from 0.01 to 10% by weight of the thermoplastic polymer and the glass fibers.

4,362,833

COMPOSITION FOR FORMING A RELEASE COATING LAYER

Isao Mune; Kihachi Suzuki, and Toshimitu Okuno, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1981, Ser. No. 264,524

Claims priority, application Japan, May 16, 1980, 55-65565

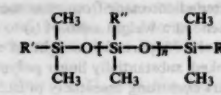
Int. Cl.³ C08K *5/54*

U.S. Cl. 524—265 **11 Claims**

1. An aqueous composition for forming a release coating layer on a substrate comprising:

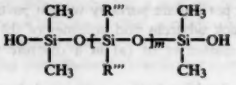
100 parts by weight (solids basis) of a mixture of (A) 100 parts by weight (solids basis) of an aqueous component of an organohydrogen polysiloxane containing at least three

silicon-bonded hydrogen atoms represented by the formula (I):



(I)

wherein R' is hydrogen or a methyl group, R'' is hydrogen, an alkyl, aryl, or alkenyl group, and n is an integer of from 5 to 500, and (B) from about 100 to 2,000 parts by weight (solids basis) of an aqueous component of a diorganopolysiloxane containing a silicon-bonded hydroxy group at both terminals thereof, represented by the formula (II):



(II)

wherein R''' is a univalent hydrocarbon group which may be substituted, and m is an integer of from 100 to 15,000; and

from about 20 to 100 parts by weight (solids basis) of an aqueous resin having a film-forming ability bearing hydroxyl and/or carboxyl functional groups,

wherein the solids content of the aqueous compositions is from about 1 to 60% by weight.

4,362,834

EXTRUSION-GRADE VINYLIDENE CHLORIDE COPOLYMER COMPOSITIONS AND FILMS PREPARED THEREFROM

Lloyd E. Lefevre, Bay City, and Fred Stevenson, Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 106,202, Dec. 26, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,645

Int. Cl.³ C08L 91/00

U.S. Cl. 524—297 15 Claims

1. A high-cling thin film which comprises an extrudable copolymer resin having a major proportion of vinylidene chloride monomer with at least one other comonomer, and at least an effective cling-enhancing proportion of less than 10 weight percent of a grease copolymer having a peak molecular weight within the range from about 500 to about 7,500 as determined by gel permeation chromatography.

4,362,835

COMPOSITION OF PELLETIZED AND POWDERY LLDPE AND LIQUID POLYOLEFIN FOR THE PRODUCTION OF FILM

Martin A. Phillips, Jr., Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 8, 1980, Ser. No. 213,806

Int. Cl.³ C08J 3/18; C08L 23/04; C08K 5/01

U.S. Cl. 524—317 8 Claims

1. A blend of a pelletized linear low density polyethylene containing from 0 to about 15 mol percent of a comonomer of a mono-olefin having 3 to 12 carbon atoms, 0 to about 20 mol percent of a pelletized low density polyethylene, 20 to 25 mol percent of a powdery linear low density polyethylene containing from 0 to about 15 mol percent of a comonomer of a mono-olefin having from 3 to 12 carbon atoms and 1 to 10 mol percent of a liquid polyolefin.

4,362,836

THERMOPLASTIC COPOLYESTER ELASTOMERS MODIFIED WITH SALTS OF ALIPHATIC POLYCARBOXYLIC ACID

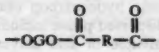
Guenther K. Hoeschele, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 24, 1980, Ser. No. 200,193

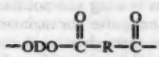
Int. Cl.³ C08G 63/02; C08K 5/09

U.S. Cl. 524—322 16 Claims

1. A thermoplastic copolyester elastomer composition comprising (A) a copolyester consisting essentially of a multiplicity of long-chain ester units and short-chain ester units joined through ester linkages, said long-chain ester units being represented by the formula



and said short-chain ester units being represented by the formula



where G is a divalent radical remaining after the removal of hydroxyl groups from at least one long-chain glycol having a melting point of less than about 55° C. and a number average molecular weight of from about 400–4000, R is a divalent radical remaining after removal of carboxyl groups from at least one dicarboxylic acid having a molecular weight of less than about 300, and D is a divalent radical remaining after the removal of hydroxyl groups from at least one aliphatic diol having a molecular weight of less than about 250, with the proviso that at least about 70 mole percent of the short-chain ester units are either ethylene terephthalate units or 1,4-butylene terephthalate units, said short-chain ester units being present in an amount of 15–95% by weight of said copolyester; and (B) from about 0.1 to 10% by weight based on said copolyester of at least one alkali metal salt of an aliphatic polycarboxylic acid containing at least 20 carbon atoms and having a molecular weight of less than about 1500.

4,362,837

PROCESS FOR PREPARING PRODUCTS CONTAINING POLYMER CHAINS HAVING IONIC LINKS AND THEIR USE

Philippe T. Teyssie, Neuville en Condroz; Robert J. Jerome, Tilff-Esneux, and Guy J. Broze, Huy, all of Belgium, assignors to Unibra Societe Anonyme, Brussels, Belgium

Filed Mar. 23, 1981, Ser. No. 246,771

Claims priority, application Luxembourg, Mar. 21, 1980, 82286

Int. Cl.³ C08F 8/44

U.S. Cl. 524—400 13 Claims

1. A process for preparing viscous, homogeneous and thermoreversible gels containing polymer chains, in which a solution of a prepolymer or polymer which contains a free acid group only at each chain end in a non polar solvent selected among the aliphatic, alicyclic and aromatic hydrocarbons having a dielectric constant of less than about 3 is reacted, at room temperature, with a stoichiometric amount based on the acid group content of the polymer of a metal aliphatic alkoxide, so as to neutralize all the free acid groups and a sufficient fraction of the non polar solvent is distilled for removing, in a substantially quantitative manner, the aliphatic alcohol formed by said reaction.

4,362,838

SOLVENT RESIN EMULSION GLOSS COATING COMPOSITION

Gus W. Leep, Elgin, and Gary L. Bolt, Malta, both of Ill., assignors to Seymour of Sycamore, Inc., Sycamore, Ill.

Filed Jun. 11, 1981, Ser. No. 272,508
Int. Cl.³ C08L 57/00, 67/06
U.S. Cl. 524—444 17 Claims

1. An improved gloss coating composition, said coating composition being a water-in-oil emulsion, said coating composition comprising: (a) a continuous phase, said continuous phase including at least two evaporable organic solvents, from about 45% to about 67% of a first solvent having a boiling range of from 100° to 300° F., from about 30% to about 45% of a second solvent having a boiling range of from 300° to 400° F., said solvents being of aliphatic or aromatic or combined aliphatic and aromatic hydrocarbon composition; (b) a dispersed phase, said dispersed phase including water; (c) a film-forming resin dissolvable in said solvents, said continuous phase further including an effective amount of said resin for forming a substantially sag-free film on a workpiece, said film registering a gloss value of no less than sixty units when applied to a non-horizontal surface of said workpiece; and (d) an emulsifier, said gloss coating composition including an effective amount of said emulsifier for maintaining homogeneity of said dispersed phase throughout said continuous phase, said emulsifier having an HLB value of from 2 to about 6, said gloss coating composition having as much as 80% water, said gloss coating composition being dryable to form said film on said workpiece, whereupon substantially all of said water and said solvents evaporate from said coating composition and do not thereby alter substantially said gloss value of said film.

4,362,839

MODIFIED POLYALKYLENE TEREPHTHALATE COMPOSITION

Satoshi Tonoki; Kazushi Hirobe; Tadashi Osawa, and Masahiko Nishigaki, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 5, 1980, Ser. No. 184,463
Claims priority, application Japan, Sep. 7, 1979, 54-115368
Int. Cl.³ C08F 20/42
U.S. Cl. 524—513 15 Claims

1. A modified polyalkylene terephthalate composition comprising

(A) 100 parts by weight of a polyester consisting substantially of polyalkylene terephthalate, with the alkylene unit thereof having from 2 to 15 carbon atoms;

(B) a polyoxyalkylene compound having the general formula:

$$R^1\text{+}(OR^2\text{+}_l OR^3]_m$$

wherein R^1 is hydrogent or an organic group of valence "m," R^2 is an aliphatic hydrocarbon group having 2 to 4 carbon atoms, l is zero or a positive integer and at least 2 for 1 molecule, R^3 is a group containing an alkali metal salt or an alkali earth metal salt of carboxylic acid, or partially hydrogen, and "m" is an integer of 1 to 6, and in an amount so that the amount of said alkali metal is 0.001 to 2.0 weight percent of said polyester; and

(C) 0 to 200 weight parts of a filler.

4,362,840

SOFT, HEAT AND FATIGUE RESISTANT ELASTOMERIC ARTICLES

Ronald J. Tabar, Amherst, Mass.; Paul C. Killgoar, Jr., Livonia, and Marvin A. Lemieux, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1980, Ser. No. 192,781
Int. Cl.³ C08K 3/04
U.S. Cl. 524—525 11 Claims

1. A soft, heat and fatigue resistant vulcanizate adapted for transmitting a load between moving mechanical parts comprising (a) 100 parts by weight crosslinked elastomer consisting essentially of (i) natural or synthetic polyisoprene rubber, and (ii) elastomeric polybutadiene made from monomers consisting essentially of butadiene at a weight ratio of (i) to (ii) of about 1:10–10:1, (b) about 10–75 parts by weight of substantially internally uncrosslinked, substantially linear polymer that (i) is made from monomers consisting essentially of isobutylene, (ii) is a strain crystallizable, elastic solid at 20° C. and (iii) has a viscosity average molecular weight (Flory) above about 1.3 million, said elastomer being crosslinked with (c) a curative comprising a curing agent selected from the group consisting of (i) a sufficient amount of sulfur to provide an efficient or semi-efficient vulcanization of said elastomer, (ii) isocyanate or blocked isocyanate in an amount sufficient to crosslink said elastomer and (iii) isocyanate or blocked isocyanate and sulfur in an amount sufficient to crosslink said elastomer and (d) 5–200 reinforcing particulate parts by weight particulate comprising carbon black wherein said polymer of (b) is dispersed throughout said elastomer of (a) in a discrete microscopic phase.

8. A suspension bushing having a Shore A hardness below about 60; which comprises (a) 100 parts by weight crosslinked elastomer consisting essentially of (i) natural or synthetic polyisoprene rubber, and (ii) elastomeric cis-polybutadiene at a weight ratio of (i) to (ii) of about 1:4–4:1, (b) about 15–35 parts by weight of substantially internally saturated, terminally unsaturated and substantially linear polyisobutylene that is a strain crystallizable, elastic solid at 20° C. and has a viscosity average molecular weight (Flory) above about 1.5 million, said elastomer being crosslinked with (c) a curative comprising a curing agent selected from the group consisting of (i) a sufficient amount of sulfur to provide an efficient or semi-efficient vulcanization of said crosslinkable elastomer, (ii) isocyanate or blocked isocyanate in an amount sufficient to crosslink said crosslinkable elastomer and (iii) isocyanate or blocked isocyanate and sulfur in an amount sufficient to crosslink said crosslinkable elastomer and (d) reinforcing particulate comprising about 20–80 parts by weight carbon black reinforcing particulate, wherein said polymer of (b) is dispersed throughout said elastomer of (a) in a discrete microscopic phase.

4,362,841

HYDROUS GEL

Shobu Minatono, and Hideo Takamatsu, both of Ibaraki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Feb. 12, 1980, Ser. No. 120,829
Claims priority, application Japan, Feb. 13, 1979, 54/15586
Int. Cl.³ C08L 9/00, 13/00
U.S. Cl. 524—531 13 Claims

1. A hydrous gel consisting essentially of a water-in-oil dispersion cured with a crosslinking agent, said dispersion comprising a rubber component in which water is dispersed in the form of droplets in the presence of a surfactant, said rubber component being selected from the group consisting of liquid polyisoprene rubber having a cis-1,4 content of not less than 70% and a molecular weight of 8,000 to 120,000, and modified liquid polyisoprene rubber which is an adduct of said liquid polyisoprene rubber and maleic anhydride or a derivative thereof.

4,362,842

COMPOSITE FILLER AND DENTAL COMPOSITION CONTAINING THE SAME

Eiichi Masuhara, Tokyo; Nobuo Nakabayashi, Matsudo; Katsuhisa Nagata, Yachiyo, and Morio Takeyama, Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,032
Claims priority, application Japan, Jul. 27, 1979, 54/94897
Int. Cl.³ A61K *6/08*; C08F *291/06*; C08K *3/36*
U.S. Cl. 524—854 5 Claims

1. A composite filler obtained by:

(1) precuring the acrylate or methacrylate of a polyhydric alcohol having at least three ethylenically unsaturated groups in the molecule thereof at a temperature from 40° to 250° C. under a pressure of from 10 to 300 kg/cm²G by using a free-radical initiator in the presence of silica as an inorganic filler such that a portion of the ethylenically unsaturated groups in the acrylate or methacrylate remains; and thereafter

(2) grinding the resultant prepolymer into a powder.

4,362,843

PROCESS FOR PRODUCING A POLYMERIZED, HEAT-RESISTANT LACQUER

Dietrich J. Bahr, Herrenberg; Marian Briska, Böblingen, and Klaus Schackert, Herrenberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1981, Ser. No. 262,251
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029428
Int. Cl.³ C09D *3/14, 3/76*; B41M *5/24*; G01D *15/34*
U.S. Cl. 525—54.23 10 Claims

1. A process for producing a polymerized, heat-resistant, cellulose acetate based lacquer of a high carbon black compatibility and a high pigment absorption, preferably for record carriers coated with aluminum, characterized in that:

initially, a higher melting polymer is homogenized by kneading at about softening temperature, whereby the quantity of plasticizer added is such that the mechanical energy of the kneading process is still transferred to the polymer,

in that subsequently, a lower melting polymer is added and this mixture is kneaded up to homogenization at about the means softening temperature, and

in that the copolymerizate thus obtained is processed to form a lacquer, adding pigments when desired.

4,362,844

BIAXIALLY STRETCHED POLYPROPYLENE-BASED PLASTIC PRODUCTS, AND PROCESS FOR MAKING SUCH PRODUCTS

Pieter J. Lemstra, Brunssum, and Marcellus J. P. Houben, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed May 26, 1981, Ser. No. 267,422
Claims priority, application Netherlands, May 31, 1980, 8003192
Int. Cl.³ C08L *23/10, 23/26*
U.S. Cl. 525—57 9 Claims

1. Plastic product based on polypropylene, biaxially stretched below the melting point, wherein the plastic consists substantially of a mixture of 60–95% by weight of a substantially crystalline propylene polymer and 5–40% by weight of an ethylene-vinylalcohol copolymer, characterized in that the ethylene-vinylalcohol copolymer has a melting point which is at most equal to that of the propylene polymer.

4,362,845

POLYVINYL CHLORIDE-BASE RESIN AND MULTISTAGE GRAFT RESIN COMPOSITION

Kazumasa Kamata; Kazuo Kishida; Kazuo Ueda, all of Ohtake, and Norihisa Osaka, Nagoya, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,070
Claims priority, application Japan, Dec. 18, 1980, 55-179501
Int. Cl.³ C08L *27/06, 51/04*
U.S. Cl. 525—57 8 Claims

1. A composition with high impact resistance and little fish eyes content, comprising 97 to 60 parts by weight of a polyvinyl chloride-base resin and 3 to 40 parts by weight of a graft copolymer obtained by the 3-stage graft-polymerization of 65 to 25 parts by weight of a monomer combination (B) comprising 12 to 57% by weight of methyl methacrylate, 1 to 24% by weight of at least one of alkyl acrylates having a C_{1-8}-alkyl group, 80 to 40% by weight of styrene and 0 to 3% by weight of at least one of polyfunctional crosslinking agents havine one or more allyl groups in the molecule onto 35 to 75 parts by weight of a butadiene-base elastomer (A) containing 30% by weight or more of 1,3-butadiene units, said 3-stage graft polymerization being carried out in the following way: at first at least one member selected from the group consisting of electrolytes and carboxyl-containing polymer latices is added to the butadiene-base elastomer (A), then, in the first stage monomer mixture consisting of major amount of methyl methacrylate and minor amount of an alkyl acrylate or acrylates, which has a proportion of 50 to 90% by weight based on total weight of methyl methacrylate and alkyl acrylate or acrylates, and, if included in said monomer combination, a polyfunctional crosslinking agent are graft-polymerized; in the second stage, styrene is graft-polymerized; and in the third stage, the remaining 10 to 50% by weight of methyl methacrylate or methyl methacrylate and an alkyl acrylate or acrylates are graft-polymerized.

4,362,846

POLYAMIDE MOULDING COMPOUNDS HAVING HIGH IMPACT STRENGTH

Helmut Korber, Odenthal; Peter Tacke, Krefeld; Friedrich Fahnler, Krefeld; Dieter Neuray, Krefeld, and Frieder Heydenreich, Ratingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 155,776, Jun. 2, 1980, abandoned, which is a continuation of Ser. No. 971,385, Dec. 20, 1978, abandoned. This application Apr. 16, 1981, Ser. No. 254,621
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758568; Jan. 14, 1978, 2801585
Int. Cl.³ C08L *77/00, 51/06*
U.S. Cl. 525—66 10 Claims

1. A polymer blend consisting of

I. from 60 to 99% by weight of a polyamide;

II. from 1 to 40% by weight of a graft product consisting of

(a) from 70 to 99% by weight of a graft substrate of polyethylene and/or a copolymer of ethylene and a vinyl ester containing up to 50% by weight of the vinyl ester, and

(b) from 1 to 30% by weight of grafted units of

(α) from 0 to 100% by weight, based on the total weight of grafted units, of (meth) acrylic acid,

(β) from 0 to 100% by weight, based on the total weight of grafted units, of an ester of (meth) acrylic acid formed from an alcohol having from 1 to 8 carbon atoms,

(γ) from 0 to 30% by weight, based on the total weight of grafted units, of acrylamide and

(δ) from 0 to 30% by weight, based on the total weight of grafted units, of maleic acid anhydride, the sum total of grafted units (α) and (δ) being 100% by weight of the total grafted units of said graft product and said products having been prepared by a process of graft polymerization which comprises bringing a

solvent free melted polymer used as a graft substrate into contact with oxygen or an oxygen-containing gas at a pressure of from 1 to 150 bar and at a temperature of from 80° to 300° C. under conditions of vigorous mixing for a maximum of 10 minutes, adding immediately thereafter the monomers which are to be grafted under conditions of vigorous mixing in the absence of oxygen and oxygen-containing gas, and removing the residual monomers after polymerization; and

III. from 0 to 20% by weight of polyethylene.

4,362,847

HEAT-CURABLE THERMOSETTING RESIN BINDER COMPOSITIONS COMPRISING A NON-ACIDIC RESINOUS COMPOUND, A NON-ACIDIC POLYESTER CROSS-LINKING AGENT, AND A TRANSESTERIFICATION CATALYST

Petrus G. Kooijmans; Werner T. Raudenbusch; Adrianus M. C. Van Steenis; Wolfgang Kunze, and Josepha M. E. Seelen-Kruijssen, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 20, 1981, Ser. No. 255,196

Claims priority, application United Kingdom, May 22, 1980, 8016916

Int. Cl.³ C08L *67/02, 63/00*

U.S. Cl. 525—172 **12 Claims**

1. A thermosetting binder composition, heat-curable to give an insoluble infusible coating, comprising:

(I) a mixture or precondensate of:

(1) a non-acidic resinous compound essentially free of ethylenical unsaturation, having a molecular weight of at least 900 and a hydroxyl content of at least 0.2 equivalents per 100 g, and

(2) a cross-linking agent comprising a non-acidic polyester of a polycarboxylic acid having more than one beta-hydroxyl ester group per molecule, at least one of components (1) and (2) having a hydroxyl functionality of more than 2, and

(II) a curing catalyst comprising a transesterification-promoting metal compound which is insoluble in liquid hydrocarbons.

4,362,848

CYCLOALIPHATIC ACRYLATE COMPOSITIONS

Hans R. Friedli; Donald L. Nelson, and John L. Massingill, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 951,416, Oct. 13, 1978, Pat. No. 4,319,009, which is a continuation-in-part of Ser. No. 866,679, Jan. 3, 1978, abandoned. This application May 29, 1981, Ser. No. 268,444

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—193 **1 Claim**

1. A thermosetting composition which comprises

(A) an unsaturated monomer selected from the acrylates, vinyl aromatics, allyl compounds, olefins and diolefins, and

(B) a cycloaliphatic acrylate composition comprising,

(1) about 60 to 95 percent by weight of dicyclopentadiene acrylate, methacrylate, or mixtures thereof

(2) about 2 to 15 percent by weight of a mixture of polycyclopentadienyl acrylates of the formula

where

R is CH_2=CZ—C(O)—O—

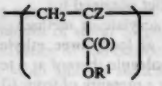
Z is H, or methyl

n is 1 or 2

m is 0 or 1 and when m is 0 there is a double bond present

(3) about 1 to about 21 percent by weight of a mixture of the copolymers of methacrylic acid or acrylic acid with adducts of cyclopentadiene with isoprene, piperylene, or mixtures thereof,

(4) about 0.05 to about 10 percent by weight of a mixture of poly acrylates having the repeating unit



where R^1 is hydrogen or

R^2 is CH_2=CZ—C(O)—O—

Z is H or methyl

n is 0, 1, or 2, and

m is 0 or 1 and when m is 0 there is a double bond present.

4,362,849

PREPARATION OF ALKENYL AROMATIC MONOMER BUTADIENE RUBBER AND PREPARATION OF IMPACT RESISTANT RESIN THEREFROM

Lu H. Tung; Larry L. Kirkby, and Charles E. Lyons, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 58,704, Jul. 18, 1979, abandoned. This application Nov. 19, 1980, Ser. No. 208,210

Int. Cl.³ C08F *236/10*

U.S. Cl. 525—316 **8 Claims**

1. A process for the preparation of an alkenyl aromatic-butadiene polymer, the steps of the method comprising providing a solution comprising 80 to 30 parts by weight of alkenyl aromatic monomer 20 to 70 parts by weight of butadiene, and up to 50 weight percent based on the total weight of the solution of a solvent which is generally inert under conditions of polymerization, initiating polymerization with a lithium based polymerization initiator at a temperature of from about 10° to 70° centigrade until about 5 to about 30 weight percent of the combined weight of alkenyl aromatic monomer and butadiene has been converted to form a rubbery alkenyl aromatic monomer-butadiene polymer containing from about 2 to 25 weight percent alkenyl aromatic monomer, terminating the polymerization and separating unreacted butadiene therefrom and initiating free radical polymerization of the alkenyl aromatic monomer present.

4,362,850

PROCESS FOR THE CONTINUOUS POLYMERIZATION OF POLYBLENDS

Raymond D. Burk, North Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 18,388, Mar. 7, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,040

Int. Cl.³ C08F *279/02*

U.S. Cl. 525—316 **2 Claims**

1. An improved process for the continuous mass polymerization of a solution comprising an alkenyl aromatic monomer having a diene rubber dissolved therein comprising the steps:

A. continuously charging said solution of an alkenyl aro-

matic monomer having a diene rubber dissolved therein to a first flow through reaction zone,

B. continuously polymerizing said solution under back mixed agitation and steady state conditions, said monomer being polymerized to an average conversion of about 15 to 50%, said diene rubber being dispersed as diene rubber particles having present grafted and occluded polymers of said monomer in amounts of about 1 to 5 parts per 100 part of said diene rubber, said solution becoming a partially polymerized solution,

C. continuously withdrawing said partially polymerized solution from said first reaction zone,

D. continuously charging said partially polymerized solution to a second flow through reaction zone and further polymerizing said partially polymerized solution to about 20 to 95% conversion under substantially linear flow,

E. continuously removing an effluent from said second reaction zone and continuously separating a polyblend from said effluent, said polyblend having a matrix phase comprising said polymerized monomer having dispersed therein said diene rubber particles,

F. the improvement comprising: said solution having present a styrene-acrylonitrile polymer have a weight ratio of styrene to acrylonitrile of about 90:10 to 50:50 in an amount sufficient to control the size of said rubber particles being dispersed in step (B).

4,362,851
ADDUCTS OF POLYAMIDE AND PERFLUORO-DICARBOXYLIC ACID

Shaul M. Aharoni, Morris Plains, and Edel Wasserman, Summit, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 25, 1980, Ser. No. 180,754
Int. Cl.³ C08G *69/46, 69/48*
U.S. Cl. 525—420 **12 Claims**

1. A crystalline adduct of a polyamide having aminocarboxylic acid moieties and a perfluorodicarboxylic acid, in which the number of carbon and nitrogen atoms in one monomeric unit chain of an aminocarboxylic acid moiety of said polyamide is the same as the sum of the carbon atoms in one chain of said perfluorodicarboxylic acid plus 2, within ±1.

4,362,852
DEVOLATILIZING MOLTEN POLYMER WITH A ROTARY DISK PROCESSOR

David Pendlebury, Chester, Va.; Hugh H. Rowan, Chapel Hill, N.C., and Edward J. Buyalos, Chester, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 16, 1981, Ser. No. 302,907
Int. Cl.³ C08G *63/76;* **C08F** *283/00;* **C08L** *67/00*
U.S. Cl. 525—437 **9 Claims**

1. In a process to remove volatiles from molten synthetic, relatively high viscosity polymers the improvement comprising

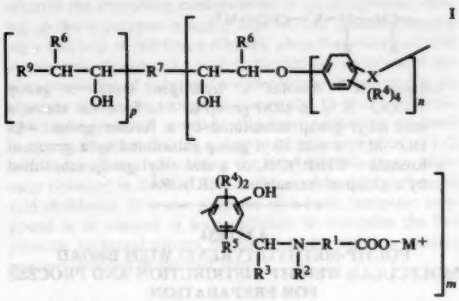
passing the molten polymer through a rotary disc polymer processor at a temperature of between about 260° C. and 300° C., at a rate of between about 10 and 75 pounds per hour per square foot (48.9 to 367 kg/hr/m²) of processor filming area, at a rotational rate of between about 5 and 75 rpm of the disks, and said processor having between about one and twenty stages.

4,362,853
RESINOUS SALTS, THEIR PREPARATION, AND THEIR USE IN COATINGS

Christopher G. Demmer, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,710
Claims priority, application United Kingdom, Oct. 24, 1980, 8034886; Jun. 18, 1981, 8118830
Int. Cl.³ C08G *8/20, 8/32, 14/06, 59/14*
U.S. Cl. 525—533 **13 Claims**

1. Carboxylate salts of the general formula

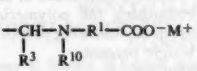


I

where

R^1 represents an aliphatic, aromatic, or araliphatic divalent group of 1 to 10 carbon atoms or a said divalent group substituted by a further $—COO^-M^+$,

R^2 represents a hydrogen atom, a group of formula



II

an alkyl group of from 1 to 6 carbon atoms, a said alkyl group substituted by a further group $—COO^-M^+$, a said alkyl group substituted by a group of formula $—CH(R^3)OH$, or a said alkyl group substituted by a group of formula $—CH(R^3)OR^8$,

with the proviso that R^1 and R^2 contain together not more than one group of formula $—COO^-M^+$,

R^3 represents a hydrogen atom or an alkyl group of 1 to 4 carbon atoms,

each R^4, which may be the same or different, represents a hydrogen atom, a halogen atom, an alkyl group of 1 to 4 carbon atoms, or an alkenyl group of 2 to 4 carbon atoms,

R^5 represents an atom or a group bonded to a ring carbon atom which is ortho or para to the indicated phenolic hydroxyl group and is a hydrogen atom, a halogen atom, an alkyl group of 1 to 4 carbon atoms, an alkenyl group of 2 to 4 carbon atoms, a group of formula $—CH(R^3)OH$, a group of formula $—CH(R^3)OR^8$, or a group of formula II,

R^6 either represents a hydrogen atom, in which case R^7 represents the residue of a polyepoxide after removal of (m+p) 1,2-epoxide groups, or it represents a covalent bond linked to the group R^7, in which case R^7, together with the indicated hydroxyethylene group, forms a cycloaliphatic ring,

R^8 represents an alkyl group of from 1 to 6 carbon atoms or an alkoxyalkyl group wherein the alkoxy group and the alkyl group each have from 1 to 6 carbon atoms,

R^9 represents the residue of a monohydric phenol, a secondary monoamine, or a monocarboxylic acid after removal of the hydrogen atom of the phenolic hydroxyl group, the carboxylic acid group, or the secondary amino group,

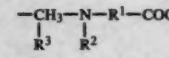
m represents 1, 2, 3, or 4,

n represents zero or 1,

p represents zero or 1, such that (m+p) is at least 2 and at most 4,

X represents an alkylene or alkylidene group of 1 to 3 carbon atoms, a carbonyl or sulfonyl group, an oxygen or sulfur atom, or a valence bond,

M^+ represents a hydrogen ion or a monovalent cation derived from an alkali metal, ammonia, or an amine, including quaternary ammonium cations, with the proviso that at least 25% of the ions M^+ are a said monovalent cation, the indicated phenolic hydroxyl group being ortho or para to the indicated group



wherein R^{10} denotes a hydrogen atom, a group $-COO^-M^+$, an alkyl group of 1 to 6 carbon atoms, a said alkyl group substituted by a further group $-COO-M^+$, a said alkyl group substituted by a group of formula $-CH(R^3)OH$, or a said alkyl group substituted by a group of formula $-CH(R^3)OR^8$.

4,362,854
POLY(P-METHYLSTYRENE) WITH BROAD MOLECULAR WEIGHT DISTRIBUTION AND PROCESS FOR PREPARATION

Aristotle G. Prapas, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,778
Int. Cl.³ C08F 2/18, 4/38, 212/12
U.S. Cl. 526—228 **8 Claims**

1. Poly(methylstyrene) having a molecular weight distribution (MWD) of at least about 4.0 and a melt index of at least 5.0, said polymethylstyrene comprising the polymerization product of methylstyrene isomers in the following proportions:

p-methylstyrene at least 90 weight percent;

m-methylstyrene 0 to 10 weight percent;

o-methylstyrene less than 0.1 weight percent.

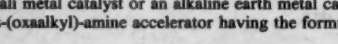
4. A process for polymerizing a methylstyrene isomer mixture which is predominantly the para-isomer comprising the steps of mixing substantially all of the methylstyrene isomer mixture to be polymerized with polymerization initiators including a high temperature initiator and a low temperature initiator and reacting the mixture at a temperature sufficient to effect polymerization to obtain a product having a MWD of at least 4.0 and a melt index of at least 5.0.

4,362,855
POLYMERIZATION OF POLYSILOXANES

Claude Millet, Saint-Priest, and Gerard Soula, Meyzieu, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 27, 1981, Ser. No. 257,711
Claims priority, application France, Apr. 29, 1980, 80 10118
Int. Cl.³ C08G 77/06
U.S. Cl. 528—14 **15 Claims**

1. In a process for the preparation of high molecular weight organopolysiloxanes by the catalyzed polymerization and rearrangement of lower molecular weight organopolysiloxanes, the improvement which comprises conducting said process in the presence of a catalytically effective amount of an alkali metal catalyst or an alkaline earth metal catalyst, and a tris-(oxaalkyl)-amine accelerator having the formula (I):



(I)

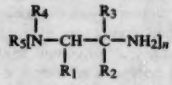
wherein n is a number greater than or equal to 0 and less than or equal to 10; R_1, R_2, R_3, R_4, which may be identical or different, each represents a hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms; and R_5 represents a hydrogen atom, an alkyl or cycloalkyl radical having up to 12 carbon atoms, a phenyl radical or a radical of the formula $-C_mH_{2m}-\phi$, or $C_mH_{2m+1}-\phi-$, with m ranging from 1 to 12 and ϕ being phenyl.

4,362,856
POLY-(-2-AMINOALKYL)POLYAMINES

Edward W. Kluger, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 16, 1981, Ser. No. 302,931
Int. Cl.³ C08G 59/50; C07C 93/04
U.S. Cl. 528—111 **17 Claims**

1. Poly-(-2-aminoalkyl)polyamine compounds of the formula:



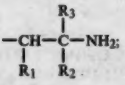
wherein:

n is an integer of from 3 to about 12;

R_1 is selected from H and an alkyl group containing from 1 to about 10 carbon atoms;

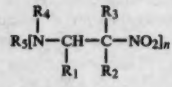
R_2 and R_3 are each independently selected from H and a lower alkyl group containing from 1 to about 6 carbon atoms;

R_4 is selected from H and



and R_5 is selected from an amine terminated polyol moiety having a molecular weight of from about 150 to about 5,000, from about 2 to about 80 ether linkages, and a valence of from about 2 to about 12.

7. Poly-(-2-nitroalkyl)polyamine compounds useful as intermediates in the preparation of poly-(-2-aminoalkyl)polyamines of the formula



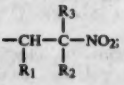
wherein:

n is an integer of from 3 to about 12;

R_1 is selected from H and an alkyl group containing from 1 to about 10 carbon atoms:

R_2 and R_3 are each independently selected from H and a lower alkyl group containing from 1 to about 6 carbon atoms;

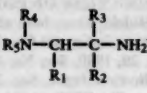
R_4 is selected from H and



and

R_5 is selected from an amine terminated polyglycol moiety having a molecular weight of from about 150 to about 5,000, from about 2 to 80 ether linkages, and a valence of from about 2 to about 12.

12. An epoxy resin composition comprising an epoxy resin and at least one epoxy resin curing agent of the formula:



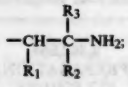
wherein:

n is an integer of from 3 to about 12;

R_1 is selected from H and an alkyl group containing from 1 to about 10 carbon atoms;

R_2 and R_3 are each independently selected from H and a lower alkyl group containing from 1 to about 6 carbon atoms;

R_4 is selected from H and



and

R_5 is selected from an amine terminated polyol moiety having a molecular weight of from about 150 to about 5,000, from about 2 to about 80 ether linkages, and a valence of from about 2 to about 12.

4,362,857

METHOD OF PRODUCING POLYETHER RESINS USING PHASE TRANSFER CATALYSTS

Kazuya Yonezawa; Junichi Ishizu, both of Kobe, and Miyuki Matsuura, Nishinomiya, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

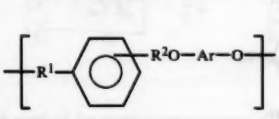
Filed Oct. 22, 1980, Ser. No. 199,421

Claims priority, application Japan, Oct. 29, 1979, 54-140367

Int. Cl.³ C08G *65/40*

U.S. Cl. 528—174 **7 Claims**

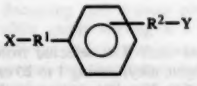
1. A method of manufacturing polymers having the repeating units of the formula:



which method comprises reacting alkali metal salts of bifunctional phenols of the formula:

MO—Ar—OM'

wherein M and M' are alkali metals and Ar is a divalent aromatic group having 6 to 30 carbon atoms, with an alkylene dihalide having the formula:



wherein X and Y are halogens, and R^1 and R^2 are divalent aliphatic hydrocarbon groups having from 1 to 4 carbon atoms and Ar is a divalent aromatic group having 6 to 30 carbon atoms, in the presence of a phase transfer catalyst.

4,362,858

PROCESS FOR PRODUCING AN AROMATIC POLYESTER COPOLYMER

Senzo Shimizu, Odawara; Isao Nomura, Hiratsuka; Motohachi Usui, Odawara, and Mashahiro Harada, Hiratsuki, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,038

Claims priority, application Japan, Dec. 4, 1980, 55-171344

Int. Cl.³ C08G *62/24, 6/28*

U.S. Cl. 528—179 **5 Claims**

1. A process for producing an aromatic polyester copolymer wherein the alternating configuration of the components making up the copolymer is highly regular, said process comprising a first step of reacting a dihydric phenolic compound with an aromatic dicarboxylic acid dichloride A in a reaction medium consisting of water and a water-immiscible solvent in the presence of a basic inorganic compound to give a phenolic hydroxyl-terminated aromatic oligoester containing predominantly an oligomer having a degree of polymerization of 1–2, and a second step of reacting the aromatic dihydroxy oligoester obtained in the first step with an aromatic dicarboxylic acid dichloride B in the presence of a basic inorganic compound in an amount at least sufficient to neutralize the free phenolic hydroxyl groups remaining in the reaction product mixture obtained in the first step.

4,362,859

POLYIMIDES FROM BICYCLO[4.2.0]OCTANE-7,8-DIMETHYL-3,4,7,8-TETRACARBOXYLIC ACID DIANHYDRIDE (I) AND BICYCLO [4.2.0]OCTANE-2,5 DIPHENYL-7,8-DIMETHYL-3,4,7,8-TETRACARBOXYLIC DIANHYDRIDE

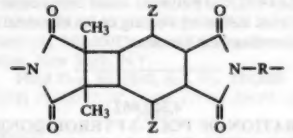
Tayseer S. Nimry, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 19, 1981, Ser. No. 294,345

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—188 **41 Claims**

1. A polyimide consisting essentially of the following recurring structure:



wherein R is a divalent aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical and Z is hydrogen or benzene radical.

4,362,860

ADDITION CURING POLYSTYRYL PYRIDINE

Joseph J. Ratto, Thousand Oaks, and Charles L. Hamermesh, Westlake Village, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 2, 1981, Ser. No. 317,629

Int. Cl.³ C08G *2/00, 12/02, 75/00*

U.S. Cl. 528—248 **7 Claims**

1. A prepolymer which comprises the condensation products of a methylated pyridine, an aromatic dialdehyde, and a methyl vinyl pyridine.

4,362,861

POLYESTERIMIDE

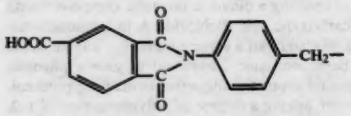
Dennis C. Shen, Clifton Park, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

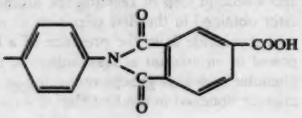
Continuation-in-part of Ser. No. 220,160, Dec. 23, 1980, abandoned. This application Oct. 14, 1981, Ser. No. 311,386

Int. Cl.³ C08G 73/16

U.S. Cl. 528—289 77 Claims

1. A polyester-imide having a hydroxy to carboxy equivalent ratio of 2.65:1 to 3.67:1, a trihydric alcohol to dihydric alcohol molar ratio of 0.23:1 to 0.62:1, the polyester-imide containing 40 to 50 equivalent % of imide groups, the imide groups being from the imide dibasic acid of the formula





the polyester having been made with the following mole percentages of ingredients:

	Mol %
dihydric alcohol	29–56
trihydric alcohol	9–19
aromatic diamine	11–18
trimellitic anhydride	22–35
aromatic diacid or diester	0–7

wherein the dihydric alcohol is ethylene glycol, the trihydric alcohol is tris(2-hydroxyethyl) isocyanurate, the aromatic diamine is methylene dianiline, the mole ratio of trimellitic anhydride to methylene dianiline is about 2:1, the aromatic diacid is terephthalic acid and the aromatic diester is a di(lower alkyl) terephthalate, the polyester-imide has a molecular weight of 700 to 2000, the hydroxyl number of the polyester-imide is 350 to 450, said polyester-imide being capable of forming a single coat insulating coating on an electrical wire capable of withstanding heat shock at 260° C.

4,362,862

PREPARATION OF POLY-2-PYRROLIDONE WITH N-(2-CAPROLACTIM)-CAPROLACTAM ACCELERATOR

Edmond H. J. P. Bour; Jean M. M. Warnier, and Johannes A. L. Brouwers, all of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Division of Ser. No. 4,475, Jan. 18, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,796

Claims priority, application Netherlands, Jan. 18, 1978, 7800587

Int. Cl.³ C08G 69/24

U.S. Cl. 528—314 5 Claims

1. In a process for the preparation of polypyrrolidone by polymerization of 2-pyrrolidone monomer in contact with an anionic catalyst and an accelerator, the improvement wherein said accelerator is N-(2-caprolactim)-caprolactam in an amount of between 0.05 and 5.0 mole percent relative to said monomer, and the polymerization is carried out at a temperature of between about 25° and 70° C. until a relative viscosity of at least 2.2, measured at 20° C. on a solution of 1 gram of polymer in 100 ml of 96% sulphuric acid, is obtained.

4,362,863

PROCESS FOR PRODUCTION OF POLYIMIDE RESINS

Makoto Kojima, and Hideki Yane, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 29, 1980, Ser. No. 191,618

Claims priority, application Japan, Sep. 28, 1979, 54-126193

Int. Cl.³ C08G 69/26

U.S. Cl. 528—353 10 Claims

1. A process for producing an aliphatic polyimide resin by reacting an aliphatic tetracarboxylic acid with a diamine represented by the formula $H_2N—R—NH_2$, wherein R is a divalent group containing at least two carbon atoms,

wherein the improvement comprises conducting the reaction in the presence of a second acid having a higher electrolytic dissociation constant than the aliphatic tetracarboxylic acid in an amount of from 0.01 to 1.0% by weight based on the total weight of the reaction system.

4,362,864

PROCESS FOR THE PREPARATION OF POLYARYLENE SULPHIDES

Karsten Idel; Dieter Freitag; Ludwig Bottenbruch, all of Krefeld, and Josef Merten, Korschenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,421

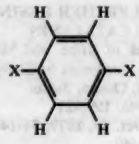
Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019732

Int. Cl.³ C08G 75/14

U.S. Cl. 528—388 8 Claims

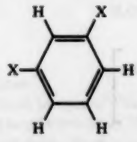
1. A process for preparing a polyarylene sulphide which consists essentially of reacting

(a) dihalogenobenzene consisting of 50 to 100 mol % of a compound of the formula



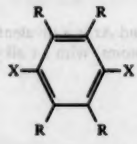
(I)

or a compound of the formula



(II)

or a mixture thereof and 0 to 50 mol % of a compound of the formula



(III)

wherein X is halogen and each R is selected from the group consisting of hydrogen, alkyl having 1 to 20 carbon atoms, cycloalkyl having 5 to 20 carbon atoms, aryl having 6 to 24 carbon atoms, alkaryl having 7 to 24 carbon atoms and aralkyl having 7 to 24 carbon atoms or two of said R groups are selected from the aforesaid group and the other two are linked together to form an aromatic or

heterocyclic ring or two of said R groups are linked together to form an aromatic or heterocyclic ring and the other two R groups are also linked together to form an aromatic or heterocyclic ring with the proviso that at least one R is other than hydrogen and

(b) 0 to 3.0 mol % based on the dihalogenobenzene content of a polyhalogeno aromatic compound of the formula

$$ArX_n \qquad (IV)$$

wherein Ar is an aromatic or heterocyclic radical with 6 to 24 carbon atoms, X is halogen and n is ≧3 with

(c) an alkyl metal sulphide in

(d) a polar solvent in the presence of

(e) 0.05–2.0 mol of alkali metal fluoride per mol of alkali metal sulphide, said alkali metal fluoride being selected from the group consisting of sodium fluoride, potassium fluoride and mixtures thereof, for a polycondensation time of up to 30 hours and at a polycondensation temperature of between 160° to 295° C., the molar ratio of (a) to (c) being in the range from 0.85:1 to 1.15:1 and the molar ratio of (c) to (d) being in the range of from 1:2 to 1:15.

4,362,865

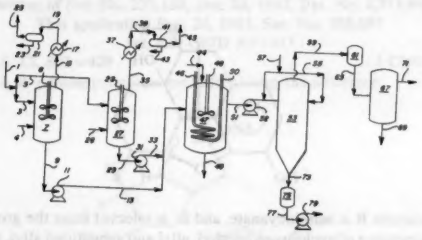
METHOD FOR CONTINUOUS SOLUBLE POLYPROPYLENE RECOVERY FROM HYDROCARBON POLYMERIZATION MEDIA

Benjamin P. Belles, St. Charles, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 63,726, Aug. 6, 1979, abandoned, which is a continuation of Ser. No. 892,310, Mar. 31, 1978, abandoned, which is a continuation of Ser. No. 712,780, Aug. 9, 1976, Pat. No. 4,098,992, which is a continuation of Ser. No. 597,338, Jul. 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,721, Nov. 14, 1974, abandoned. This application Feb. 18, 1981, Ser. No. 235,678

Int. Cl.³ C08F 6/12

U.S. Cl. 528—500 **7 Claims**



1. A method for continuous recovery of soluble polypropylene, having a number average molecular weight in excess of 5,000, from spent polymerization medium consisting essentially of:

a. steam stripping, at a temperature between 170° F. and about 250° F., under a pressure between about 4 and about 25 psig, said polymerization medium to form a two-phase system comprising an organic phase and an aqueous phase wherein said organic phase comprises between about 10 and 39.5 weight percent soluble polypropylene and a small amount of entrained crystalline polypropylene;

b. decanting said organic phase from said aqueous phase while gently stirring at a position just above interface between said organic phase and said aqueous phase while maintaining the temperature and pressure at about said temperature and said pressure of said steam stripping, respectively; and

c. removing essentially all remaining volatile material from said organic phase of step (b) while heating said organic phase to between about 300° F. and 475° F. by means of a heat transfer surface, whereby there is recovered polypropylene of sufficient fluidity to be readily transfered.

4,362,866

APROSAMINE DERIVATIVES

Kikuo Igarashi, Itami, and Tsunetoshi Honma, Ikoma, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

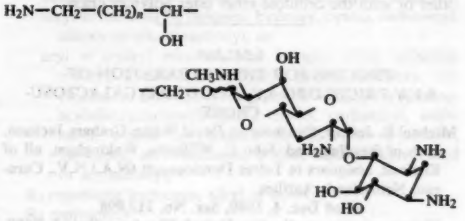
Filed Oct. 22, 1981, Ser. No. 313,971

Claims priority, application Japan, Oct. 27, 1980, 55-150926

Int. Cl.³ C07H 15/22

U.S. Cl. 536—16.8 **2 Claims**

1. An aprosamine derivative having the following general formula and its pharmaceutically acceptable acid addition salts:



(wherein n is 0 or 1; the wave line indicates axial or equatorial configuration).

4,362,867

RECOMBINANT CDNA CONSTRUCTION METHOD AND HYBRID NUCLEOTIDES USEFUL IN CLONING

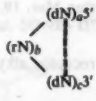
Gary V. Paddock, Mount Pleasant, S.C., assignor to Research Corporation, New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,648

Int. Cl.³ C07H 15/12; C12P 21/00, 21/02, 19/34, 15/00; C12N 1/00

U.S. Cl. 536—27 **4 Claims**

1. A compound having the general formula:



wherein $(dN)_a$ and $(dN)_c$ represent series of deoxyribonucleotides and $(rN)_b$ represents a series of ribonucleotides; wherein a, b, and c are the numbers of nucleotides in the series; with the proviso that b is ≧1, a is ≧35, and c is ≧10, wherein the series of deoxyribonucleotides $(dN)_a$ includes a series of deoxyribonucleotides which is substantially complementary to the series of deoxyribonucleotides $(dN)_c$ and the dashed line represents a noncovalent bonding between complementary deoxyribonucleotide series; and wherein the solid lines represent covalent phosphodiester bonds.

4,362,868

PLASTICIZED CELLULOSE POLYMERS

Michael Burnup, Swindon; Gerard F. Hayes, Broxbourne, and Norman C. Paul, Hoddesdon, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britian and Northern Ireland, London, England

Filed Sep. 19, 1980, Ser. No. 188,663

Claims priority, application United Kingdom, Sep. 24, 1979, 7932970

Int. Cl.³ C08G *18/10*

U.S. Cl. 536—66 17 Claims

1. An inhibitor-coated rocket motor propellant wherein the inhibitor comprises a cellulose ether ester polymer consisting essentially of a base polymer, having a chain of β-anhydroglucose units joined by ether linkages and having ether substituents wherein at least one of the β-anhydroglucose units in the chain of the base polymer is additionally substituted, by esterification of at least one hydroxyl group on the chain, by at least one organic group which contains at least two carbon atoms and is selected from the group consisting of ester groups which contain no functional groups and ester groups which contain non-cross-linking functional groups that do not react with each other or with the cellulose ether ester polymer chain.

4,362,869

PROCESS FOR THE PREPARATION OF 4,1',6'-TRICHLORO-4,1',6'-TRIDEOXYGALACTOSUCROSE

Michael R. Jenner, Pangbourne; David Waite; Graham Jackson, both of Reading, and John C. Williams, Wokingham, all of England, assignors to Tate Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed Dec. 4, 1980, Ser. No. 212,898

Claims priority, application United Kingdom, Dec. 2, 1907, 7943933; Mar. 28, 1980, 8010629; Apr. 2, 1980, 8011086; May 20, 1980, 8016668; Nov. 14, 1980, 8036711

Int. Cl.³ C07H *1/00*

U.S. Cl. 536—122 12 Claims

1. In a process for the production of 4,1',6'-trichloro-4,1',6'-trideoxygalactosucrose including the steps of (a) isomerising 2,3,4,3',4'-penta-O-acetyl sucrose to 2,3,6,3',4'-penta-O-acetyl sucrose; (b) chlorinating the isomerised acetate at the 4,1', and 6'-positions and (c) deacetylating the chlorinated product, the improvement comprising effecting the isomerisation step (a) by treating a solution of 2,3,4,3',4'-penta-O-acetyl-sucrose in an inert solvent with a weak acid having an acid strength on the same order as acetic acid at an elevated temperature of at least about 80° C.

4,362,870

SELECTIVE OPIOID RECEPTOR ALKYLATING AGENTS

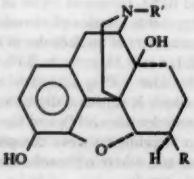
Philip S. Portoghese, St. Paul, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 112,556, Jan. 16, 1980, abandoned. This application Mar. 19, 1981, Ser. No. 245,052

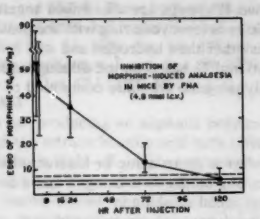
Int. Cl.³ C07D *489/08;* A61K *31/485*

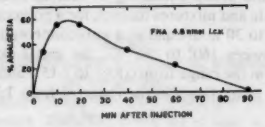
U.S. Cl. 542—403 4 Claims

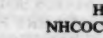
1. A selective opioid receptor alkylating agent having the formula:



wherein R is an ester having the general formula:

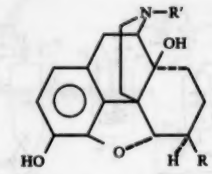






wherein R^2 is $(CH_2)_nH$ or $(CH_2)_nAr$ and n is 1 to 5, wherein Ar is phenyl, furane, naphthyl, thiophene or substituted phenyl, the substituent being halogen, hydroxy, nitro, methoxy, methyl, trifluoromethyl or amino, and R' is selected from the group consisting of cyclopropylmethyl, allyl and substituted allyl, the substituent being methyl, ethyl, propyl or halogen, and pharmaceutically acceptable salts thereof.

4. A selective opioid receptor alkylating agent having the formula:



wherein R is isothiocyanate, and R' is selected from the group consisting of cyclopropylmethyl, allyl and substituted allyl, the substituent being methyl, ethyl, propyl or halogen, and pharmaceutically acceptable salts thereof.

4,362,871

POLYCARBOXYLIC ACID GLYCIDYL ESTERS AND PROCESS FOR PREPARING THE SAME

Teruaki Higashiguthi, Kashiwara, and Mithio Ishioka, Nara, both of Japan, assignors to Okamura Oil Mill Limited, Japan

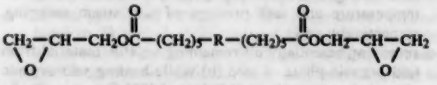
Filed Oct. 21, 1980, Ser. No. 199,281

Claims priority, application Japan, Oct. 26, 1979, 54-138935

Int. Cl.³ C07D *303/27, 303/16*

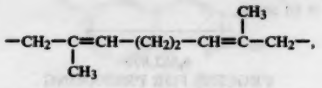
U.S. Cl. 542—427 5 Claims

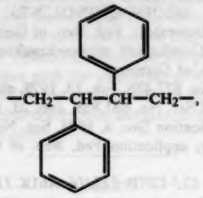
1. A polycarboxylic acid glycidyl ester represented by the formula

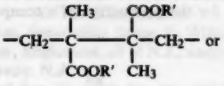


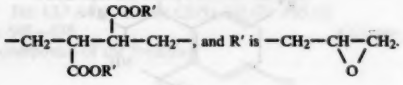
-continued

wherein —R— is









4,362,872

6,6-DIFLUORO-5-HYDROXY-4-(3-OXOALK-1-ENYL)-HEXAHYDRO CYCLOPENTA[B] FURAN-2-OLS

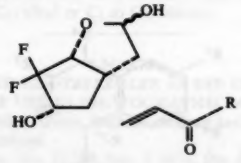
Jerome L. Moniot, Richboro, Pa.; Rita T. Fox, Princeton, N.J.; Peter W. Sprague, Pennington, N.J., and Martin F. Haslanger, Lambertville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 230,133, Jan. 30, 1981, Pat. No. 4,311,644. This application Sep. 24, 1981, Ser. No. 305,053

Int. Cl.³ C07D *307/935*

U.S. Cl. 542—429 **2 Claims**

1. A prostacyclin intermediate having the structure:



wherein R is lower alkyl, lower alkenyl or aralkyl wherein the aryl part consists of unsubstituted or substituted monocyclic or bicyclic aromatic groups containing from 6 to 10 carbon atoms in the ring portion wherein the substituent is selected from the group consisting of lower alkyl, halogen or lower alkoxy.

4,362,873

PROCESS FOR THE PREPARATION OF BASIC OXAZINE DYESTUFFS

Gerard L. A. Belfort, Oissel, France, assignor to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France

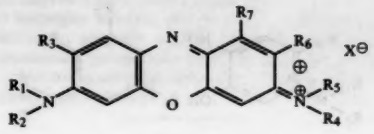
Filed Mar. 24, 1981, Ser. No. 246,979

Claims priority, application France, Apr. 18, 1980, 80 08723

Int. Cl.³ C09B *19/00*

U.S. Cl. 544—103 **17 Claims**

1. Process for the preparation of a basic oxazine dyestuff of the formula:



in which

R_1 represents:

hydrogen,

unsubstituted alkyl, alkenyl or aralkyl,

alkyl substituted by halogen, hydroxy, cyano, carbamoyl, alkoxy or alkoxycarbonyl, or

aralkyl substituted by halogen, alkyl, trifluoromethyl, cycloalkyl, hydroxy, alkoxy, aralkoxy, cycloalkoxy, aryloxy, carboxy, acyl, acyloxy, acylamino, acylalkoxycarbonyl, nitro, cyano, carbamoyl, sulfamoyl, amino, alkylamino, dialkylamino, arylamino, mercapto, alkylmercapto, arylmercapto, alkylsulfonyl or arylsulfonyl;

R_2 represents:

unsubstituted alkyl, alkenyl, cycloalkyl, aryl or aralkyl,

alkyl substituted by halogen, hydroxy, cyano, carbamoyl, alkoxy or alkoxycarbonyl, or

aryl or aralkyl substituted by halogen, alkyl, trifluoromethyl, cycloalkyl, hydroxy, alkoxy, aralkoxy, cycloalkoxy, aryloxy, carboxy, acyl, acyloxy, acylamino, acylalkoxycarbonyl, nitro, cyano, carbamoyl, sulfamoyl, amino, alkylamino, dialkylamino, arylamino, mercapto, alkylmercapto, arylmercapto, alkylsulfonyl or arylsulfonyl;

R_3 represents hydrogen, alkyl or alkoxy;

R_4 represents:

hydrogen,

unsubstituted alkyl, aryl or aralkyl,

alkyl substituted by halogen, hydroxy, cyano, carbamoyl, alkoxy or alkoxycarbonyl, or

aryl or aralkyl substituted by halogen, alkyl, trifluoromethyl, cycloalkyl, hydroxy, alkoxy, aralkoxy, cycloalkoxy, aryloxy, carboxy, acyl, acyloxy, acylamino, acylalkoxycarbonyl, nitro, cyano, carbamoyl, sulfamoyl, amino, alkylamino, dialkylamino, arylamino, mercapto, alkylmercapto, arylmercapto, alkylsulfonyl or arylsulfonyl;

R_5 represents hydrogen, unsubstituted alkyl or alkyl substituted by halogen, hydroxy, cyano, carbamoyl, alkoxy or alkoxycarbonyl;

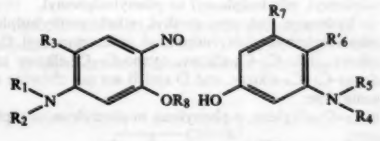
R_6 represents hydrogen, alkyl or alkoxy;

R_7 represents hydrogen or alkyl or forms with R_6 a fused benzene ring; and

$X^{\ominus}$ represents an anion,

which process comprises reacting in aqueous medium, organic medium or mixture thereof;

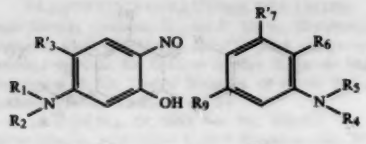
(a) a nitroso compound of formula (II) with an aminophenol of formula (III):



(II) (III)

in which R_1 to R_5 and R_7 have the same meanings as above, R'_6 represents hydrogen or alkyl, and R_8 represents unsubstituted alkyl or alkyl substituted by hydroxy, or

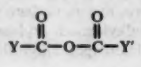
(b) a nitroso compound of formula (IV) with a compound of formula (V):



(IV) (V)

in which R_1, R_2, R_4, R_5 and R_6 have the same meanings as above, R'_3 and R'_7 each represents hydrogen or alkyl, and R_9 represents alkoxy, unsubstituted amino or amino substituted by one or two alkyl,

said reaction being effected without its being necessary to raise the temperature above the ambient temperature and in the presence of an anhydride of a carboxylic acid of the formula:



in which Y represents unsubstituted linear or ramified alkyl containing 1 to 6 carbon atoms, linear or ramified halogeno-substituted alkyl containing 1 to 6 carbon atoms, unsubstituted phenyl or phenyl carrying up to three substituents selected from the halogen atoms and the nitro, alkyl and alkoxy groups, Y' is hydrogen or has the same significance as Y, said anhydride being used in a quantity at least equal to the stoichiometry.

4,362,874

QUATERNARY REACTIVE COMPOUNDS

Walter Kalk; Karl H. Schündehütte, and Manfred Söll, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

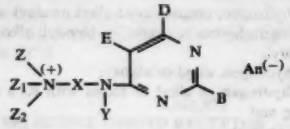
Division of Ser. No. 14,565, Feb. 23, 1979, which is a continuation of Ser. No. 804,858, Jun. 4, 1977, abandoned. This application Jun. 5, 1980, Ser. No. 156,829

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626495

Int. Cl.[3] **C07D** *239/30, 239/38, 239/42, 251/50*

U.S. Cl. 544—317 **9 Claims**

1. A compound of the formula



wherein

E is hydrogen, halogen, methyl, ethyl, phenyl, cyano, nitro, methylsulphonyl, ethylsulphonyl, or phenylsulphonyl;

B is halogen, methylsulphonyl, ethylsulphonyl, phenylsulphonyl, or also is hydrogen when D is a halogen, methylsulphonyl, ethylsulphonyl or phenylsulphonyl,

D is hydrogen, halogen, methyl, ethyl, methylsulphonyl, ethylsulphonyl, phenylsulphonyl, trifluoromethyl, C_1–C_4-alkoxy, halo-C_1–C_4-alkoxy, cyano-C_1–C_4-alkoxy or hydroxy-C_1–C_4-alkoxy, and D and B are not chlorine at the same time;

X is C_2–C_3-alkylene, o-phenylene, m-phenylene, or p-phenylene;

Y is C_1–C_4-alkyl, and

Z, Z_1 and Z_2 independently of one another are C_1–C_4-alkyl, cyclohexyl, phenyl, benzyl or phenylethyl, which are unsubstituted or substituted by 1–3 halogen, amino, hydroxy, C_1–C_4-alkyl;

Z and Z_1, together with N, are pyrrolidine, piperidine morpholine or piperazine, which is unsubstituted or substituted by C_1–C_4-alkyl; or Z, Z_1 and Z_2, together with N, are pyridine which is unsubstituted or substituted by C_1–C_4-alkyl;

$An^{(-)}$ is an anion.

4,362,875

PROCESS FOR PREPARING (1-ACYLAMINOMETHYL)-1,2,3,4-TETRAHYDROISOQUINOLINES

Jürgen Seubert, Darmstadt, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

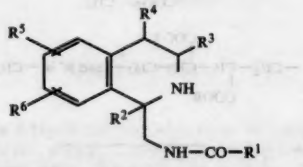
Division of Ser. No. 877,436, Feb. 13, 1978, abandoned, which is a continuation of Ser. No. 651,856, Jan. 23, 1976, abandoned. This application Dec. 6, 1978, Ser. No. 967,046

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1975, 2504250

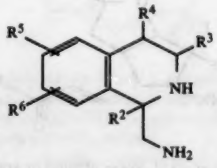
Int. Cl.[3] **C07D** *217/16;* **A61K** *31/47*

U.S. Cl. 546—146 **6 Claims**

1. A process for the production of a compound of the formula



wherein R^1 is alkyl of 1–6 carbon atoms; cycloalkyl or cycloalkenyl each having 4–7 ring carbon atoms and the cycloalkyl optionally being substituted by one of methyl, hydroxyl and oxo; phenyl; phenyl substituted by 1–3 amino, carboxylic acylamino of up to 4 carbon atoms, Hal, hydroxyl, methoxy and nitro, wherein Hal is fluorine, chlorine, bromine or iodine; thienyl; pyridyl; tetrahydropyranyl; or tetrahydrothiopyranyl; R^2, R^3 and R^4 each are H or methyl; R^5 and R^6 each are H, methyl or methoxy; which comprises monoacylating, with a compound of the formula R^1—CO—Y wherein Y is halogen and R^1 has the values given above, a monoacid addition salt of a compound of the formula



wherein R^2 through R^6 have the values given above wherein the monoacylation is carried out in the presence of a base which is more weakly basic than the monoacid salt and wherein the reaction temperature is 0°–100° C. and the reaction time is 24–0.5 hours.

4,362,876

PREPARATION OF DIHYDROXYQUINOLINE AND CERTAIN DERIVATIVES

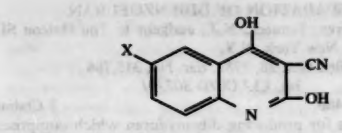
Lubomir Vacek, Toledo, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Aug. 11, 1978, Ser. No. 932,912

Int. Cl.[3] **C07D** *215/54, 215/22*

U.S. Cl. 546—155 **3 Claims**

1. A process for preparing 3-cyano-2,4-dihydroxyquinolines having the formula



where X is Cl, Br, I, NO_2, or H, which process comprises the steps of (a) reacting isatoic anhydride or the corresponding chloro, bromo, iodo or nitro derivative thereof with a C-1 to C-5 alkyl ester of cyanoacetic acid in the presence of a base which is not reactive with the anhydride to form a 2-(2'-aminobenzoyl) cyanoacetate as an intermediate compound, and (b) cyclizing the intermediate cyanoacetate to form the 3-cyano-2,4-dihydroxyquinoline.

4,362,877

2,4-DISUBSTITUTED-1,2,5-THIADIAZOL-3(2H)-ONE ANTIMICROBIALS

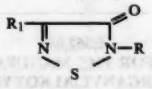
Richard A. Dybas, Somerville; Bruce E. Witzel, Rahway, and Nathaniel Grier, Englewood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 21, 1980, Ser. No. 142,193

Int. Cl.³ A01N *43/82*; C07D *285/10, 405/06*

U.S. Cl. 548—135 **6 Claims**

1. A compound of the formula:



where R is C_1 to C_{18} alkyl linear or branched; phenyl —C_1 to C_{10} alkyl, phenyl, and phenyl independently mono- or di-substituted with bromine, chlorine, fluorine and iodine, alkyl containing from C_1 to C_{12} carbon atoms or alkoxy having the same number of carbon atoms; and R^1 is C_1 to C_{18} alkyl, linear or branched; loweralkoxyalkyl wherein the alkoxy group contains from one to six carbon atoms and the alkyl moiety from one to four carbon atoms, tetrahydrofuran-2-ylmethyl, and phenyl-C_1 to C_{10} alkyl; ring substituted or disubstituted phenyl C_1 to C_{10} alkyl where said substituent is the same or different and said substituent is bromine, chlorine, fluorine or iodine, C_1 to C_{12} alkyl or C_1 to C_{12} alkoxy.

4,362,878

SUBSTITUTED 1,2,4-TRIAZOLES AS DIR COMPOUNDS AND THEIR USE IN PHOTOGRAPHIC MATERIALS

Terence C. Webb, Witham, England, assignor to Ciba-Geigy AG, Basel, Switzerland

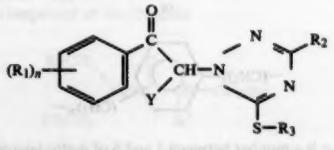
Division of Ser. No. 72,735, Sep. 5, 1979, Pat. No. 4,259,437. This application Jun. 12, 1980, Ser. No. 158,979

Claims priority, application United Kingdom, Sep. 18, 1978, 37260/78

Int. Cl.³ C07D *249/12, 403/06*

U.S. Cl. 548—253 **7 Claims**

1. A compound of the general formula:



wherein:

R_1 is hydrogen, hydroxy, halogen or alkoxy of 6 to 18 carbon atoms, and n is 1 or 2,

R_2 is hydrogen or alkyl having 1 to 4 carbon atoms,

R_3 is alkyl of 4 to 12 carbon atoms and

Y is hydrogen, halogen, phenyl or a 1, 2, 4-triazole, benzimidazole, tetrazole, urazole, pyrazole, phthalimido or succinimido group, substituted by alkyl of one to four carbon atoms, alkylmercapto of 1 to 8 carbon atoms, nitro, phenyl and/or benzyl.

4,362,879

ISOTHIOUREIDO ISOINDOLEDIONES AND USE AS PLANT GROWTH REGULATORS

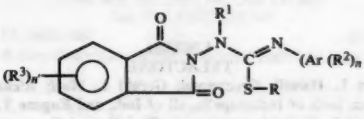
Joel L. Kirkpatrick, Washington Crossing, Pa.; Natu R. Patel, Overland Park, Kans., and Jerry L. Rutter, Mentor, Ohio, assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 133,888, Apr. 10, 1980, Pat. No. 4,292,071, which is a continuation-in-part of Ser. No. 35,875, May 3, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,297

Int. Cl.³ C07D *209/48*

U.S. Cl. 548—473 **71 Claims**

1. A compound which has the structural formula:



in which R is cyano, C_1 to C_4 alkyl, C_3 to C_5 alkenyl or fluoroalkenyl, propynyl, phenyallyl or C_1 to C_3 alkyl to which is attached a phenyl, bromophenyl, chlorophenyl, methylphenyl, benzoyl, trimethylacetyl, phenoxy, chlorophenoxy, methylthio, fluorobenzoyl, N-lower alkyl-N-phenylcarbamyl, carboxy or carbethoxy substituent,

R^1 is H, acetyl, C_1 to C_3 alkyl, alkenyl or alkynyl to which may be attached phenyl, halophenyl, carbethoxy, vinyloxy or phenoxy groups;

Ar is phenyl or benzoyl;

R^2 is C_1 to C_4 alkyl, alkoxy, alkylamino or alkylthio; phenoxy, benzyloxy, carbalkoxy, acetyl, methylenedioxy, trifluoromethyl, nitro, halo or cyano and n represents the number of points of attachment, which may be zero or an integer from 1 to 4 except when R^2 is methylenedioxy or nitro n is 0 or 1, with the provision that at least one position ortho to the point of attachment of a phenyl ring of the Ar structure to the remainder of the molecule must be unsubstituted;

R^3 is lower alkyl or halo and n' may be zero or an integer from 1 to 4.

4,362,880

CHEMICAL PROCESS

Kenneth T. Veal, Effingham, and Trevor J. Grinter, Fetcham, nr. Leatherhead both of England, assignors to Beecham Group Limited, England

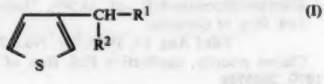
Filed Mar. 30, 1981, Ser. No. 249,004

Claims priority, application United Kingdom, Apr. 11, 1980, 8012077

Int. Cl.³ C07D *333/24, 239/00, 211/20, 403/00*

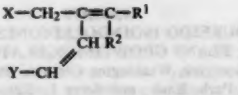
U.S. Cl. 549—79 **9 Claims**

1. A process for the preparation of a thiophene of formula (I):



wherein R^1 represents a carboxylic acid group or an ester or amide derivative thereof or a nitrile group; and R^2 represents hydrogen, a hydrocarbon or heterocyclic group, a carboxylic

acid group or an ester of amide derivative thereof; or an acyl, nitrile, isonitrile or optionally substituted imine group of formula —CH=NZ or —N=CHZ where Z represents hydrogen, alkyl or aryl, or a sulphonyl, —SR^a, sulphoxide —$SO.R^a$ or sulphonate —$SO.OR^a$ group wherein R^a represents C_{1-6} alkyl, or aryl, which process comprises treating a compound of formula (II):



(II)

wherein R^1 and R^2 are as defined with respect to formula (I) above; X represents a halogen atom, a hydroxyl group or a functionalised hydroxyl group; Y represents a halogen atom, a hydroxyl group, or an alkoxy group; under basic conditions with a source of nucleophilic sulphur ionically bound to a polymeric support which is insoluble in the reaction solution.

4,362,881

TYLACTONE

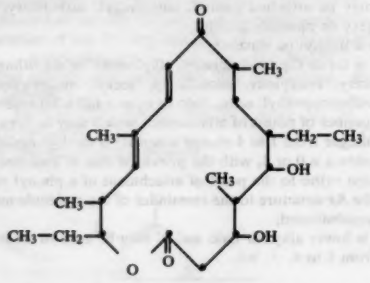
Robert L. Hamill, Greenwood; Gerald L. Huff; Richard H. Baltz, both of Indianapolis, all of Ind., and Eugene T. Seno, Norwich, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 162,976, Jul. 2, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,343

Int. Cl.³ C07D *313/00*

U.S. Cl. 549—271 **8 Claims**

1. Tylactone which has the structure:



and the diacyl ester derivative of tylactone wherein each is an ester of a monocarboxylic acid or a hemi-ester of a dicarboxylic acid, each of 1 to 18 carbon atoms.

4,362,882

4-METHYL-2,5-DIOXABICYCLO-[4,4,0]-DECAN-3-ONE, ITS PREPARATION AND USE IN PERFUME COMPOSITIONS AND AS AN ODORANT

Ulf-Armin Schaper, Düsseldorf, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 178,082

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935749

Int. Cl.³ C07D *317/06*

U.S. Cl. 549—274 **1 Claim**

1. 4-Methyl-2,5-dioxabicyclo-[4,4,0]-decan-3-one.

4,362,883

PREPARATION OF DIBENZOFURAN

Robert J. Harvey, Teaneck, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,784

Int. Cl.³ C07D *307/91*

U.S. Cl. 549—460 **3 Claims**

1. A process for producing dibenzofuran which comprises reacting diphenyl ether in the presence of a palladium carboxylate catalyst, a carboxylic acid and a copper carboxylate promoter or co-catalyst.

4,362,884

SILACROWN ETHERS, METHOD OF MAKING SAME, AND USE AS PHASE-TRANSFER CATALYSTS

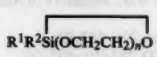
Barry C. Arkles, Oreland, Pa., assignor to Petrarch Systems, Inc., Levittown, Pa.

Filed Nov. 23, 1981, Ser. No. 323,629

Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—446 **12 Claims**

1. Compounds of the structure:



wherein n is an integer from 4 to 10 inclusive, and R^1 and R^2 are selected from the group consisting of alkyl, unsaturated alkyl, alkoxy, aryl and hydrogen.

4,362,885

PROCESS FOR THE MANUFACTURE OF (IODOORGANYL)ALKOXYSILANES

Peter Panster, Rodenbach; Alfons Karl, Hanau; Wolfgang Buder, Rodenbach, and Peter Kleinschmit, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

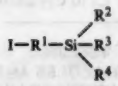
Filed Dec. 14, 1981, Ser. No. 330,355

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3047995

Int. Cl.³ C07F *7/08, 7/18*

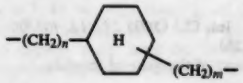
U.S. Cl. 556—446 **6 Claims**

1. Process for the manufacture of an (iodoorganyl)alkoxysilane of the formula:

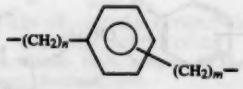


(I)

in which R^1 represents straight or branched chain alkylene having 1 to 20 carbon atoms, cycloalkylene having 5 to 8 carbon atoms or a unit of the type:



or



wherein n is a number between 1 and 6 of methylene groups in the chain attached to the halogen and m is a number from 0 to 6, R^2 represents alkoxy having 1 to 5 carbon atoms, methoxyethoxy or ethoxyethoxy, R^3 and R^4 may be the same or different

and have the same meaning as R^2 or represent branched or linear alkyl having 1 to 10 carbon atoms, phenyl or phenyl substituted with halogen, which process comprises reacting the corresponding chlorine or bromine silane compound with stoichiometric to double molar quantities of alkali, alkaline earth or ammonium iodide in the presence of 0.01 to 5 mol % of a quarternary ammonium, phosphonium, arsonium, antimonium or tertiary sulfonium salt with alkyl, aryl or aralkyl substitutents and an organic or inorganic anion or a crown ether, in an organic liquid or mixture of organic liquids which is substantially inert towards the silane and is able to dissolve at least partly the iodide or silane component.

4,362,886

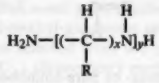
PREPARATION OF LINEAR POLYALKYLENE POLYAMINES USING METAL CATALYST

Michael E. Ford, Trexlertown, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

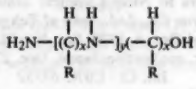
Filed Jan. 5, 1981, Ser. No. 222,817
Int. Cl.³ C07C *85/06*; C07D *241/04, 403/12*
U.S. Cl. 564—479 **8 Claims**

1. A process for preparing a noncyclic polyalkylene polyamine comprising the steps of:

contacting an alkyleneamine compound having two primary amino groups of the formula:



wherein R is hydrogen or a lower alkyl, X is a number from 2 to about 6, and Y is a number from 1 to about 4 with a hydroxy compound having primary or secondary hydroxyl groups of the general formula:



wherein R is hydrogen or a lower alkyl, X is a number from 2 to about 6; and Y is a number from 0 to about 3; said contacting being performed in the presence of a catalytically effective amount of a compound containing bismuth, arsenic or antimony at temperatures sufficient to effect reaction between said alkyleneamine and said hydroxy compound under a pressure sufficient to maintain the reaction mixture essentially in liquid phase.

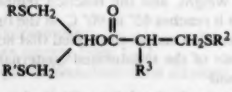
4,362,887

SYNERGISTIC ANTIOXIDANT MIXTURES

Richard H. Kline, Silver Lake, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 10, 1981, Ser. No. 252,778
Int. Cl.³ C07C *149/40, 149/26, 149/20*
U.S. Cl. 560—152 **5 Claims**

1. A compound of the formula:



(I)

wherein R, R' and R^2 are alkyl radicals having 1 to 20 carbon atoms, phenyl radicals which may be substituted by 1 or 2 alkyl groups having 1 to 8 carbon atoms, aralkyl radicals having 7 to 12 carbon atoms or cycloalkyl radicals having 5 to 12 carbon atoms and R^3 is hydrogen or an alkyl radical having 1 to 4 carbon atoms.

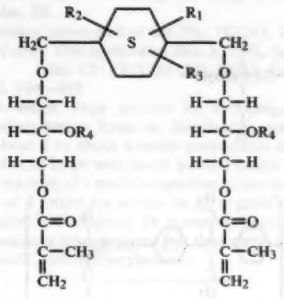
4,362,888

ADDUCTS OF 1,4-BIS[(3-METHACROYL-2-HYDROXYPROPOXY)-METHYL] CYCLOHEXANE AND DERIVATIVES THEREOF WITH ISOCYANATES

Jan A. Orlowski, Altadena; David V. Butler, West Covina, and Patrick D. Kidd, San Dimas, all of Calif., assignors to Scientific Pharmaceuticals, Inc., Duarte, Calif.

Filed Sep. 15, 1980, Ser. No. 187,407
Int. Cl.³ C07C *125/06*
U.S. Cl. 560—162 **12 Claims**

1. A dimethacrylate of the following chemical structure:

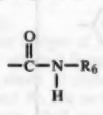


where

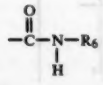
is a saturated, 6 membered, monocyclic, hydrocarbyl ring system;

R_1, R_2 and R_3 are the same or different and are hydrogen or alkyl or alkoxy groups having 1 to 12 carbon atoms; and

R_4 and R_5 are the same or different and are hydrogen or groups of the formula:



where R_6 is an aliphatic, aromatic or cycloaliphatic group having 1 to 14 carbon atoms, provided that at least one of the groups R_4 and R_5 is a group of the formula:



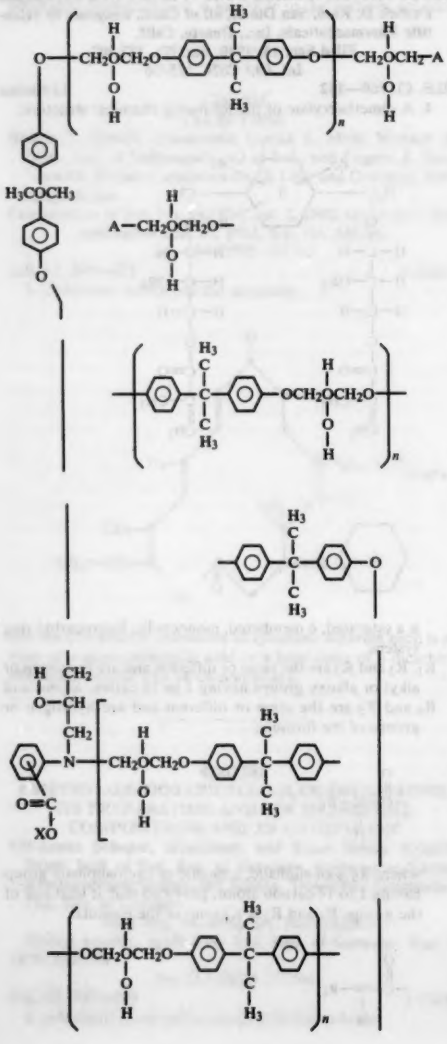
4,362,889

USE OF A POLYFUNCTIONAL SURFACE-ACTIVE COMONOMER AND OTHER AGENTS TO IMPROVE ADHESION BETWEEN A RESIN OR COMPOSITE MATERIAL AND A SUBSTRATE

Rafael L. Bowen, Gaithersburg, Md., assignor to The American Dental Association Health Foundation, Washington, D.C.

Division of Ser. No. 10,803, Feb. 9, 1979, Pat. No. 4,251,565.
This application Oct. 27, 1980, Ser. No. 200,989
Int. Cl.³ C07C *69/587*
U.S. Cl. 560—221 17 Claims

1. A compound, useful as an adhesive between a resin or composite material and a solid surface capable of binding polyvalent cations, of the formula



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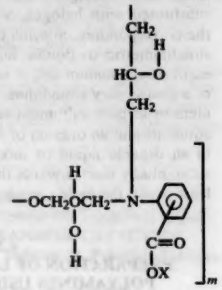
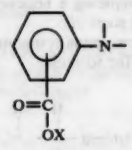


where A is a monomer polymerizable by free radical polymerization, X is a univalent metal cation, m is an integer which may vary between 0 and 10, n is an integer which may vary between 0 and 2, and the aminobenzoate structure



represents ortho-, meta- or para-aminobenzoate.

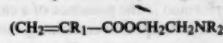
4,362,890

PROCESS FOR THE PREPARATION OF UNSATURATED QUATERNARY AMMONIUM SALTS

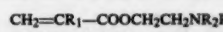
Iwao Ohshima, and Yasutaka Nakashima, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co. Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,331
Claims priority, application Japan, Dec. 27, 1979, 54-169314
Int. Cl.³ C07C *67/52*
U.S. Cl. 560—222 11 Claims

1. A process for preparing an unsaturated quaternary ammonium salt represented by the general formula (I):



where R_1 is —H or —CH_3, R_2 and R_3 are —CH_3 or —C_2H_5, R_4 is —CH_3 or —C_2H_5, and X is Cl, Br, or I, by reacting an unsaturated tertiary amine represented by the general formula (II):



wherein R_1, R_2 and R_3 are as defined above, with a halogenated hydrocarbon in an aqueous medium, characterized in that:

(i) the reaction is carried out at a concentration of the unsaturated tertiary amine in the aqueous medium of 78 to 91% by weight to produce the unsaturated quaternary ammonium salt at a concentration in the aqueous medium of 82–93% by weight, and the reaction temperature is elevated so that it reaches 65° to 90° C. at the time of completion of the reaction and so controlled that no precipitation of the crystals of the unsaturated quaternary ammonium salt occurs and

(ii) the reaction product solution obtained is cooled by attaching it, either immediately or after mixing with the reaction product solution which has already been cooled to a temperature lower than that of said reaction product solution, in the form of a thin film onto a cooled glass-

lined or chromium-plated solid surface to precipitate the unsaturated quaternary ammonium salt crystals to form the desired slurry.

4,362,891

ALKANOIC ACID DERIVATIVES

Alfredo Guerrato, and Michele Perchinunno, both of Verona, Italy, assignors to Glaxo Group Limited, London, England

Filed Jun. 17, 1980, Ser. No. 160,426

Claims priority, application United Kingdom, Jun. 18, 1979, 7921083

Int. Cl.³ C07C *63/64, 69/76*

U.S. Cl. 562—495 12 Claims

1. 2-(4-Dimethylvinylphenyl)propionic acid of formula (II):

(II)

and physiologically acceptable salts thereof selected from the group consisting of alkali metal salts, alkaline earth metal salts, lysine, arginine and N-methyl-glucamine salts, and physiologically acceptable esters selected from the group consisting of C_{1-4} alkyl esters and C_{2-5} alkanoyloxy methyl esters.

4,362,892

HYPOLIPIDAEMIC COMPOUNDS

Richard M. Hindley, Reigate, and Keith H. Baggaley, Redhill, both of England, assignors to Beecham Group Limited, England

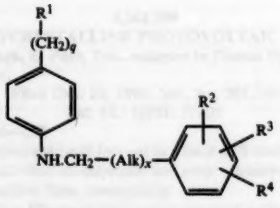
Division of Ser. No. 763,563, Jan. 28, 1977, abandoned. This application Dec. 12, 1977, Ser. No. 859,379

Claims priority, application United Kingdom, Feb. 11, 1976, 5287/76

Int. Cl.³ C07C *87/28, 91/00*

U.S. Cl. 564—374 2 Claims

1. A compound of the formula:



wherein

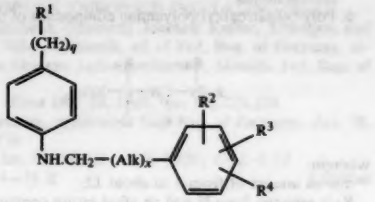
R^1 is C_{1-10} hydroxyalkyl;

q is zero or an integer from 1–12;

Alk is a straight or branched chain alkylene group; x is zero or one;

R^2 and R^3 are the same or different and each is hydrogen, halogen, C_{1-8} alkyl or C_{1-8} alkoxy; and R^4 is halogen in the 4-position.

2. A compound of the formula:



wherein

R^1 is C_{1-10} hydroxyalkyl;

q is zero or an integer from 1–12;

Alk is a straight or branched chain alkylene group; x is zero or one;

R^2 and R^3 are the same or different and each is hydrogen, halogen, C_{1-8} alkyl or C_{1-8} alkoxy; and R^4 is chlorine in the 4-position.

4,362,893

PREPARATION OF C-NITROSODIARYLAMINES FROM DIARYLAMINES

Paul R. Kurek, Schaumburg, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 112,761, Jan. 17, 1980, abandoned. This application Jun. 3, 1981, Ser. No. 270,037

Int. Cl.³ C07C *85/145, 85/18, 85/20*

U.S. Cl. 564—410 11 Claims

1. A single stage process for the preparation of a C-nitrosodiarylamine from its diarylamine comprising adding from about 2 to about 6 molar proportions of a solution of a mineral acid in an anhydrous alcohol below the surface of a stirred mixture of 1 molar proportion of the diarylamine and an excess of a nitrite ion source in an organic liquid containing from about 0.2 to about 18 grams of water per mole of the diarylamine at a temperature less than about 60° C., and recovering said C-nitrosodiarylamine.

4,362,894

POLY-(-2-AMINOALKYL)POLYAMINES

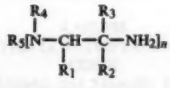
Edward W. Kluger, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 4, 1981, Ser. No. 260,148

Int. Cl.³ C07C *87/20;* C08G *59/50*

U.S. Cl. 564—512 9 Claims

1. Poly-(-2'-aminoalkyl)polyamine compounds of the formula:



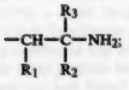
wherein:

n is an integer of from 3 to about 12;

R_1 is selected from H and an alkyl group containing from 1 to about 10 carbon atoms;

R_2 and R_3 are each independently selected from H and a lower alkyl group containing from 1 to about 6 carbon atoms;

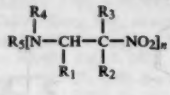
R_4 is selected from H and



and

R_5 is an alkyl group containing from about 6 to about 25 carbon atoms.

6. Poly-(-2-nitroalkyl)polyamine compounds of the formula



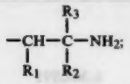
wherein:

n is an integer of from 3 to about 12;

R_1 is selected from H and an alkyl group containing from 1 to about 10 carbon atoms;

R_2 and R_3 are each independently selected from H and a lower alkyl group containing from 1 to about 6 carbon atoms;

R_4 is selected from H and



and

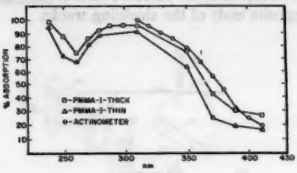
R_5 is selected from an alkyl group containing from about 6 to about 25 carbon atoms.

4,362,895

ULTRAVIOLET ABSORBING COPOLYMERS

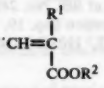
Amitava Gupta, Pasadena, and Andre H. Yavrouian, La Crescenta, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 126,580, Mar. 3, 1980, Pat. No. 4,310,650.
This application Sep. 21, 1981, Ser. No. 303,969
Int. Cl.³ H01L *31/04;* B32B *27/30;* C08F *216/02*
U.S. Cl. 136—256 6 Claims



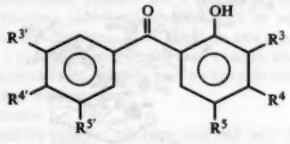
1. A coated article comprising a photolabile substrate containing a coating of an addition polymerized copolymer of a monomer mixture comprising:

an acrylic ester of the formula:



where R^1 is hydrogen, alkyl of 1 to 6 carbon atoms and R^2 is alkyl of 1 to 6 carbon atoms; and

0.1 to 5% of hydroxy-benzophenone of the formula



where R^3, R^4, R^5, $R^{3'}$, $R^{4'}$, $R^{5'}$ are individually selected from H, OR^6 or Z where R^6 is methyl, ethyl or propyl and Z is $-CH_2)_m-CH{=}CH_2$ where m is 1 or 2 and at least one but no more than two of R^3, R^4, R^5, $R^{3'}$, $R^{4'}$ or $R^{5'}$ are Z.

2. An article according to claim 1 in which the coating has a thickness from 1 mm to 1 cm.

4,362,896

POLYCRYSTALLINE PHOTOVOLTAIC CELL

Vijay P. Singh, El Paso, Tex., assignor to Photon Power, Inc., El Paso, Tex.

Filed Oct. 28, 1980, Ser. No. 201,588
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—258 15 Claims

1. A photovoltaic cell formed in a backwall configuration on a transparent vitreous substrate and over a transparent electrically conductive film, comprising:

a crystalline film containing cadmium and sulfur and having crystals with at least one dimension greater than 0.5 micron formed to a first thickness in the range of 1–6 microns, and

a film of Cu_xS forming a substantially planar heterojunction with said crystalline film containing cadmium and sulfur and having a thickness in the range of 0.5–1.0 microns,

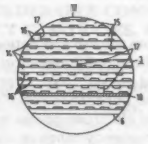
said first thickness being effective to maintain a depletion layer formed from and adjacent said heterojunction from contacting said electrically conductive film.

4,362,897

HIGH-VOLTAGE BUSHING WITH LAYERS OF PRESHRUNK EMBOSSED INSULATING FOILS

Günther Matthäus, Spardorf; Joachim Ruffer, Erlangen, and Andreas Diller, Hallstadt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 30, 1980, Ser. No. 221,256
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001779
Int. Cl.³ H01B *17/28;* H01G *4/22, 4/32*
U.S. Cl. 174—31 R 5 Claims



1. A high voltage insulator bushing of the type having at least one conductor part at a high voltage with respect to at least a second conductor part at a reference potential, the insulator bushing further having an insulator body disposed between said first and second conductor parts which is formed of at least one wound, smooth insulating foil with electrically conductive potential control inserts disposed within preselected windings of the insulating foil in the insulator body, the insulator body being impregnated with a liquid insulating medium, the insulator bushing further comprising as at least one layer of the insulator body, an embossed insulating foil formed of a polypropylene material which is embossed with between 300 and 700 dimples per square centimeter, said polypropylene material being of the type which shrinks above a predetermined temperature, said embossed insulating foil having a predetermined smooth thickness in an unstretched state prior to embossing, and a predetermined overall embossed thickness after embossing, said embossed foil having been entirely subjected to a thermal shrinking treatment after embossing and prior to being wound into said insulator body so as to have an overall thickness after said thermal shrinking treatment which is at least 20 percent larger than said predetermined smooth thickness.

4,362,898

FLUSH MOUNTED LOW IMPEDANCE GROUNDING CONE

Bernard Zendle, Adelphi, and Marcella Petree, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1980, Ser. No. 214,545
Int. Cl.³ H05K *9/00*
U.S. Cl. 174—35 R 4 Claims

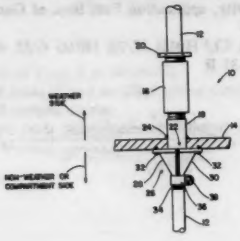
1. A grounding device for forming a grounding connection between a ship's hull or bulkhead and a coaxial cable extending from the weather or external side of the bulkhead through an opening therein to the non-weather or compartment side thereof, the grounding device comprising:

a metallic cone having a slant height and being split or formed into two halves lengthwise, each half of the metallic cone including a flanged top portion, a flared bottom portion and a slant body portion integral and intermediate each of the flanged top and flared bottom portions;

means for flush mounting and securing the flanged top por-

tion of each half of the cone to the non-weather side of the ship's hull about a bared shield of the coaxial cable and overlying the opening; and

means for gripping the flared bottom portion of each half of the metallic cone to the bared shield, thereby forming a substantially continuous 360° electrical grounding connection between the ship's hull and the bared shield, the



slant height from the top and bottom portions of each half of the cone being configured short enough, for a particular dimensioned coaxial cable, to present a low inductance and overall low impedance path for currents induced by an EMP or any electromagnetic interference source having a similar frequency range in an external length of the coaxial cable.

4,362,899

PRINTED CIRCUIT BOARD

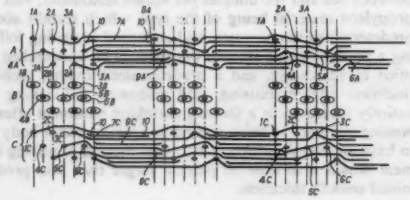
Paul L. Borrill, Cranleigh, England, assignor to University College London, London, England

Filed Oct. 2, 1980, Ser. No. 193,109

Claims priority, application United Kingdom, Oct. 5, 1979, 7934603

Int. Cl.³ H01B 11/08

U.S. Cl. 174—36 3 Claims



1. A multilayer printed circuit board comprising:

at least two layers each having an array of linear parallel conductor tracks;

at least one layer having a conductor area forming a ground plane, said ground plane layer being disposed between said two conductor track layers;

a plurality of terminal arrays extending generally transversely to the longitudinal axes of said conductor tracks, said terminal arrays being spaced apart in the direction of the linear axes of said conductor tracks;

electrically conductive means extending through the multiple layers of the printed circuit board for each terminal of each array, whereby each individual terminal of each array is electrically connected to a corresponding individual terminal of all other arrays, and all the terminals of each array are individually electrically connected to corresponding ones of the linear conductor tracks;

each conductor track layer further having a plurality of arrays of linear parallel conductive shielding tracks, each shielding track being arranged between two adjacent conductor tracks and between two adjacent arrays of said terminals such that the opposite ends of each shielding track terminate adjacent terminal areas of said conductor tracks associated with respective ones of two adjacent terminal arrays; and

electrically conductive means for connecting each of the shielding tracks of said two adjacent conductor track layers in common to the intermediate ground plane, said electrically conductive means extending between the respective layers of the circuit board in the regions of the two opposite ends of the shielding tracks.

4,362,900

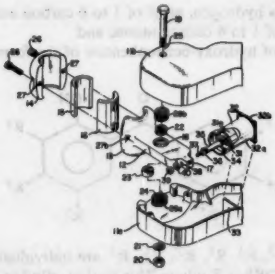
AIR CYLINDER-TYPE VIBRATION ABSORBER FOR SUSPENDED CABLES AND SUSPENDED CABLE IN COMBINATION THEREWITH

Olaf Nigol, Etobicoke, and Herbert J. Houston, Oakville, both of Canada, assignors to Slater Steel Industries Limited, Hamilton, Canada

Continuation-in-part of Ser. No. 249,488, Mar. 31, 1981, abandoned. This application Sep. 10, 1981, Ser. No. 300,752

Int. Cl.³ H02G 7/14, 7/12

U.S. Cl. 174—42 11 Claims



1. An air cylinder-type vibration absorber for suspended cables, comprising:

a frame having two opposed portions, at least one of said portions having an air cylinder support wall;

a shaft extending between said portions;

a clamp body having a first portion for engaging a cable in a predetermined position and a second portion including (i) a fulcrum part mounted to said shaft for rotation of said clamp body about an axis generally parallel to a predetermined position of a cable, and (ii) an end part adjacent said fulcrum part on the side thereof remote from said first portion;

an air cylinder having an orifice and coupled between said end part of said clamp body and said wall for forcing air through said orifice to produce viscous frictional losses in response to rotational movement of said clamp body about said axis; and

resilient means coaxial with said shaft for restoring said clamp body to an initial angular orientation thereof with respect to said frame,

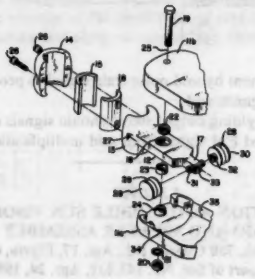
said orifice being adjustable to vary said viscous frictional losses, said losses substantially exceeding any hysteresis losses within said vibration absorber, so that said viscous frictional losses provide dissipative damping for both a cable and said resilient means.

4,362,901

BELLOWS-TYPE VIBRATION ABSORBER FOR SUSPENDED CABLES AND SUSPENDED CABLE IN COMBINATION THEREWITH

Olaf Nigol, Etobicoke, and Herbert J. Houston, Oakville, both of Canada, assignors to Slater Steel Industries Limited, Hamilton, Canada

Continuation-in-part of Ser. No. 249,425, Mar. 31, 1981, abandoned. This application Sep. 10, 1981, Ser. No. 300,926
Int. Cl.³ H02G 7/14, 7/12
U.S. Cl. 174—42 12 Claims



1. A bellows-type vibration absorber for suspended cables comprising:

a frame having two opposed portions, said portions cooperating to provide first and second spaced parallel side walls;

a shaft extending between said portions;

a clamp body having a first portion for engaging a cable in a predetermined position and a second portion including (i) a fulcrum part rotatably mounted to said shaft for rotation of said clamp body about an axis generally parallel to a predetermined position of a cable, and (ii) an end part adjacent said fulcrum part on the side thereof remote from said first portion;

orifice means;

a first bellows coupled between said end part of said clamp body and said first side wall for forcing air through said orifice means to produce viscous frictional losses in response to rotational movement of said clamp body about said axis;

a second bellows coupled between said end part of said clamp body and said second side wall for forcing air through said orifice means to produce viscous frictional losses in response to rotational movement of said clamp body about said axis;

each of said bellows having a resilient part for restoring said clamp body to an initial angular orientation thereof with respect to said frame; and

means for adjusting said orifice means to vary said viscous frictional losses, said losses substantially exceeding any hysteresis losses within said vibration absorber, so that said viscous frictional losses provide dissipative damping for both a cable and said resilient parts of said bellows.

4,362,902

CERAMIC CHIP CARRIER

Dimitry G. Grabbe, Lisbon Falls, Me., assignor to AMP Incorporated, Harrisburg, Pa.

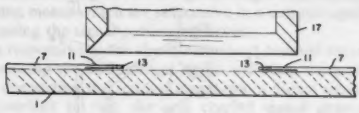
Filed Mar. 27, 1981, Ser. No. 248,604
Int. Cl.³ H01L 23/48; H05K 5/02
U.S. Cl. 174—52 FP 4 Claims

1. A ceramic chip carrier which comprises:

(a) a ceramic substrate,

(b) a lead frame bonded directly to said ceramic substrate, said lead frame having a copper surface and including a plurality of leads extending from the edge of said substrate toward a center region of said substrate, and

(c) a rim connecting together the ends of said leads extending toward the center of said substrate, said rim being



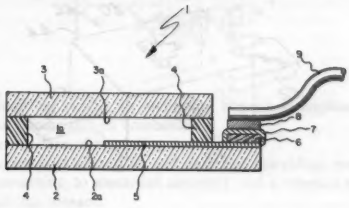
coplanar with said lead frame and being disposed in non-contacting relation with said substrate, said rim having a thickness which is less than the thickness of said lead frame.

4,362,903

ELECTRICAL CONDUCTOR INTERCONNECT PROVIDING SOLDERABLE CONNECTIONS TO HARD-TO-CONTACT SUBSTRATES, SUCH AS LIQUID CRYSTAL CELLS

Charles W. Eichelberger, Schenectady; Wesley K. Waldron, Scotia, and Robert J. Wojnarowski, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,331
Int. Cl.³ B23K 1/20; G02F 1/13
U.S. Cl. 174—94 R 35 Claims



1. An electrical conductor interconnect, comprising: a first conductor; a formation of a cured polymer containing a finely-divided first metallic composition and a second metal, said formation being positioned in electrical contact to said first conductor; and a contiguous layer of said second metal, wherein said second metal is below the metal of said first metallic composition in the activity series and wherein both said formation and said contiguous layer are electrically conductive and in electrical contact.

4,362,904

PRINTED CIRCUIT BOARD COMPONENT MOUNTING SUPPORT AND SPACER

Richard E. Schneider, Amherst, and Stephen L. Majesky, Wellington, both of Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Filed Jan. 18, 1982, Ser. No. 340,480
Int. Cl.³ H05K 7/00
U.S. Cl. 174—138 G 8 Claims

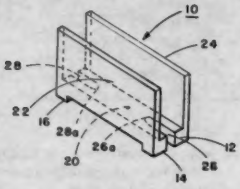
1. A printed circuit board component mounting support and spacer comprising:

(a) a base with an essentially rectangular configuration having two long edges and two short edges;

(b) at least four essentially rectangular feet extending downwards from said base;

(c) two essentially rectangular sides each extending in a direction substantially upwards from the base, each of said sides being associated with a respective one of said long edges; and

(d) two slots in said base each having edges essentially parallel to said base long edges, each of said slots extending inwards from a respective one of said base short edges a



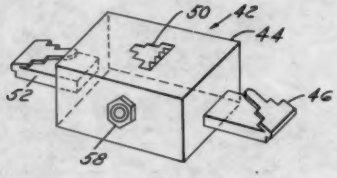
predetermined distance, each of said slots terminating in an edge of predetermined configuration, said slots being wide enough to permit passage of the electrical leads of a component therebetween.

4,362,905

UNIVERSAL ADAPTERS FOR MODULAR PLUG TELEPHONES

Nassar Ismail, 10 Roberts St., #35, Sommerville, Mass. 02145

Filed Jan. 29, 1980, Ser. No. 116,471
Int. Cl.³ H01R *27/02*
U.S. Cl. 179—1 PC **4 Claims**



1. A telephone modular plug and jack adapter comprising a block, at least two modular plugs extending from the block, at least two modular jacks in the block, and a recording jack in the block wherein a first one of the modular jacks and a first one of the modular plugs each include four wire contacts and are electrically connected together in parallel, a second one of the modular plugs and second one of the modular jacks each include three wire contacts and are electrically connected together in parallel, and the recording jack has two electrical contacts and is connected electrically in parallel to two parallel connections of the four wire plug and jack and to two parallel connections of the three wire plug and jack.

4,362,906

FM RECEIVER

Kohji Ishida, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

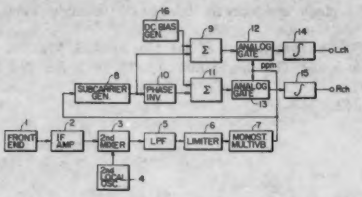
Filed Sep. 10, 1980, Ser. No. 185,846
Claims priority, application Japan, Sep. 10, 1979, 54-116023
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GD **9 Claims**

1. An FM receiver comprising:

pulse modulation signal generating means for generating a pulse train signal having a parameter corresponding to an instantaneous frequency of a received FM signal;

subcarrier signal generating means for selectively detecting a pilot signal component included in one of said received FM signal and said pulse train signal to generate a first subcarrier signal in phase with said pilot signal and a second subcarrier signal opposite in phase to said pilot signal, said first and second subcarrier signals including a predetermined DC component;

multiplication means for separately multiplying first and second subcarrier signals including said predetermined



DC component by said pulse train signal to provide multiplication signals; and

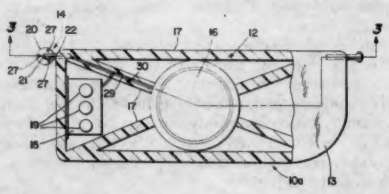
means for providing output stereophonic signals included in said received FM signal from said multiplication signals.

4,362,907

COMBINATION AUTOMOBILE SUN VISOR AND RADIO AND SPEAKER ASSEMBLY

David D. Polacsek, 780 Oberlin Rd., Apt. 17, Elyria, Ohio 44035

Continuation-in-part of Ser. No. 143,431, Apr. 24, 1980, Pat. No. 4,326,100. This application Feb. 17, 1981, Ser. No. 235,418
Int. Cl.³ H04R *1/02*; B60R *11/02*
U.S. Cl. 179—1 VE **14 Claims**



1. A combination automobile sun visor and speaker assembly comprising a thin bidirectional wafer-type speaker enclosed in a layer of acoustically transparent material to form an entire sun visor, the speaker comprising a lightweight acoustic panel supported by a frame, a module contained in the speaker, the module being connected to the speaker to drive the speaker, means for mounting the speaker above a windshield in place of a conventional sun visor, the mounting means comprising a pivotable sun visor mounting assembly attached directly to the speaker, and wiring extending from the speaker for connection to an external power source.

4,362,908

CIRCUIT ARRANGEMENT FOR EMITTING RINGING SIGNALS IN A TELEPHONE SYSTEM

Flavio Melindo, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Feb. 18, 1981, Ser. No. 235,534
Claims priority, application Italy, Feb. 19, 1980, 67252 A/80
Int. Cl.³ H04M *3/02*
U.S. Cl. 179—18 HB **8 Claims**

1. In a telephone system wherein an exchange is linked with an associated subscriber station via a two-conductor line whose conductors are interconnected at said station by a ringer in series with a capacitor shunted by a normally open hook switch, said ringer being operable in an open state of said hook switch by alternating current of low audio frequency transmitted over said line in response to an incoming-call signal electronically generated at the exchange under the control of

line-monitoring equipment which terminates said incoming-call signal upon detecting a closure of said hook switch,

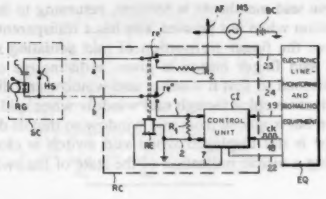
the combination therewith of:

a generator of oscillations of said low audio frequency superimposed upon a d-c voltage;

a relay having a normal position connecting said conductors to an extension of said line leading to said line-monitoring equipment;

switchover means operable in the presence of said incoming-call signal to place said relay in an off-normal position in which said conductors are connected to said generator in lieu of said extension whereby said oscillations pass through said capacitor and said ringer to the exclusion of said d-c voltage in the open state of said hook switch;

sensing means including an impedance element connected



by said relay in said off-normal position thereof in series with said generator and said line for detecting a significant unbalance in line current due to closure of said hook switch, said sensing means further comprising polarity-responsive means connected across said impedance element for determining the direction of current flow therethrough, timing means controlled by said polarity-responsive means for measuring a difference between the durations of current flow in a first and in a second direction during one cycle of said low audio frequency, and comparison means connected to said timing means and to a source of reference value; and

control means connected to said comparison means for deactivating said switchover means upon said difference exceeding said reference value, thereby restoring said relay to said normal position thereof.

4,362,909

ECHO CANCELER WITH HIGH-PASS FILTER

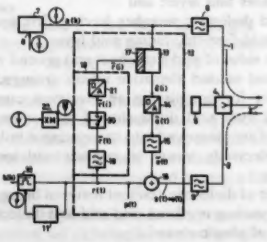
Wilfred A. M. Snijders; Nicolaas A. M. Verhoeckx, and Petrus J. van Gerwen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,304

Claims priority, application Netherlands, May 14, 1979, 7903759

Int. Cl.³ H04B *3/24*

U.S. Cl. 179—170.2 **2 Claims**



1. An echo canceler comprising:

an adjustable signal processing device connected to a transmit path of a transmission system;

combining means connected to a receive path of the above-mentioned transmission system for combining signals occurring in the receive path with signals produced by the signal processing device for generating a residual signal;

adjusting means which are responsive to a control signal for adjusting the signal processing device,

means responsive to the above-mentioned residual signal for generating the said control signal and comprising means for converting the residual signal into a digital signal;

characterized in that the said control signal generating means comprise high-pass filter means arranged in cascade with the converting means.

4,362,910

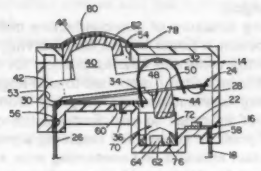
ELECTRICAL SWITCH

Theodore D. Boebel, Bedford; William B. Walkup, Southboro, and Edward B. Mitchell, Belmont, all of Mass., assignors to Ark-Les Corporation, Watertown, Mass.

Filed Dec. 31, 1980, Ser. No. 221,719

Int. Cl.³ H01H *5/18, 9/16, 9/26*

U.S. Cl. 200—5 EA **10 Claims**



1. An electrical switch for switching household appliances and the like comprising in combination

a supporting case of insulating material,

a contacting post affixed to said case and providing means for connecting to electrical circuitry and a contact area for making contact,

a contacting element of generally elongated shape attached to said case and providing means near a first end for connecting to electrical circuitry and contacting area for making contact near its second end, said element having a flexing region near its first end permitting said contacting area to move into contact with the contact area of said post or away therefrom,

a biasing spring attached to said contacting element and directly or indirectly to said case and arranged to bias the position of said contacting area into contact with said contact area when said contacting element is in a first portion of its range of rotation around its flexing region and to bias said contacting area away from said contact area when said contacting element is in a second portion of its range,

an actuating structure of non-conductive material having a pivot portion, a finger button for receiving pressure from a finger tip, a turn-on bearing portion for bearing on and driving, when pressure from a finger is applied to said finger button, said contacting element around its pivot from said second portion of its range to said first portion of its range, a turn-off pressure surface for receiving a pressure to open said contact area and said contacting area, a turn-off bearing portion for driving said element, when pressure is applied to said turn-off pressure surface, from said first portion of its range to said second portion, said pivot portion being positioned adjacent to the flexing region of said contacting element, said turn-on and turn-off bearing portions being positioned nearer said contacting area than said finger portion, said finger button being situated intermediate between said pivot and said contacting area,

said turn-off pressure receiving surface, said finger button, and said pivot being positioned such that as projected on said contacting element the finger button and the turn-off pressure receiving surface lie on the same side of the pivot.

7. A gang of serially adjacent switches for switching household appliances and the like, each switch comprising in combination

a supporting case of insulating material,

a contacting post affixed to said case and providing means for connecting to electrical circuitry and a contact area for making contact,

a contacting element of generally elongated shape attached to said case and providing means near a first end for connecting to electrical circuitry and contacting area for making contact near its second end, said element having a flexing region near its first end permitting said contacting area to move into contact with the contact area of said post or away therefrom,

a biasing spring attached to said contacting element and directly or indirectly to said case and arranged to bias the position of said contacting area into contact with said contact area when said contacting element is in a first portion of its range of rotation around its flexing region and to bias said contacting area away from said contact area when said contacting element is in a second portion of its range,

an actuating structure of non-conductive material having a pivot portion, a finger button for receiving pressure from a finger tip, a turn-on bearing portion for driving, when pressure from a finger is applied to said finger button, said contacting element around its pivot from said second portion of its range to said first portion of its range, a turn-off pressure surface for receiving a pressure to open said contact area and said contacting area, a turn-off bearing portion for driving said element from said first portion of its range to said second portion, said pivot portion being positioned adjacent to the flexing region of said contacting element, said turn-on and turn-off bearing portions being positioned near said contacting area, and said finger button being situated intermediate between said pivot and said contacting area,

including between adjacent switches of said gang a slide element moving in a raceway of said case and having surfaces bearing on said release pressure areas of actuating structures of adjacent switches of said gang and shaped and arranged so that the movement of one of said actuating structures to close its associated contact forces a slide element against the release pressure area of the actuating structure of any closed switch of said gang causing it to open.

10. An electrical switch for switching household appliances and the like comprising in combination

a supporting case of insulating material,

a contacting post affixed to said case and providing means for connecting to electrical circuitry and a contact area for making contact,

a contacting element of generally elongated shape attached to said case and providing means near a first end for connecting to electrical circuitry and contacting area for making contact near its second end, said element having a flexing region near its first end permitting said contacting are to move into contact with the contact area of said post or away therefrom,

a biasing spring attached to said contacting element and directly or indirectly to said case and arranged to bias the position of said contacting area into contact with said contact area when said contacting element is in a first portion of its range of rotation around its flexing region and to bias said contacting area away from said contact area when said contacting element is in a second portion of its range,

an actuating structure of non-conductive material having a pivot portion, a finger button for receiving pressure from a finger tip, a turn-on bearing portion for driving, when pressure from a finger is applied to said finger button, said contacting element around its pivot from said second portion of its range to said first portion of its range, a turn-off pressure surface for receiving a pressure to open said contact area and said contacting area, a turn-off bearing portion for driving said element from said first portion of its range to said second portion, said pivot portion being positioned adjacent to the flexing region of said contacting element, said turn-on and turn-off bearing portions being positioned near said contacting area, and said finger button being situated intermediate between said pivot and said contacting area,

wherein said finger button is situated in an aperture in said case and said aperture is sealed with a flexible membrane passing over said finger button to permit pressure to be applied to said finger button through said membrane while sealing the interior of said case from entry of foreign material,

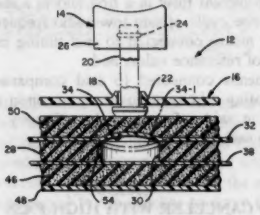
wherein said membrane is resilient, returning to its upward position when not pressed, and has a transparent window above the finger tip portion of said actuating structure, and said finger button is given a distinctive color and positioned so that it touches said window and displays its distinctive color though said window when said switch is open but is spaced from said window so that its distinctive color is not displayed when said switch is closed, thus giving a visible indication of the state of the switch.

4,362,911

MEMBRANE KEYBOARD SWITCH ASSEMBLY HAVING SELECTABLE TACTILE PROPERTIES

Ronald J. Sears, Middletown, and Jack R. Gross, Waynesville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 17, 1980, Ser. No. 187,904
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **7 Claims**



1. An electrical switch array comprising:

a layer of dielectric, resilient material having a plurality of holes arranged in a pattern therein;

a first, flexible, dielectric sheet having first and second sides and also having a plurality of dome-shaped areas therein with the convex sides of said dome-shaped areas being located on said second side and said dome-shaped areas being aligned with said holes in said layer so that said first side faces said layer; and

a second dielectric member having first and second sides with said first side facing said layer;

said first sides of said first sheet and second member having first and second electrode means arranged, respectively, thereon for completing an electrical connection represented by a said dome-shaped area when a said dome-shaped area is moved into its associated hole to enable said first electrode means to contact said second electrode means;

said layer of dielectric resilient material being made of flexile foam, such as urethane, and said first dielectric sheet being made of plastic material;

each said dome-shaped area having a size to enable it to be depressed by a user's finger; and

said layer of dielectric resilient material being substantially thicker than said first dielectric sheet;

each said dome-shaped area being designed for snap action and also having a perimeter, with each said dome-shaped area having its perimeter aligned with respect to an associated said hole so as to be resiliently supported by a portion of said layer surrounding said hole.

4,362,912

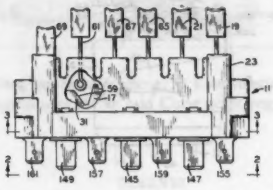
SLIDER TYPE PUSH BUTTON SWITCH WITH SAFETY LOCKOUT FEATURE

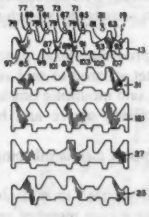
Stewart A. Woodward, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 16, 1981, Ser. No. 243,859

Int. Cl.³ H01H *9/26*

U.S. Cl. 200—5 B **16 Claims**





10. An electrical switch adapted to control a plurality of circuits therethrough comprising a plurality of operator actuable push buttons reciprocally movable to effect the control of the circuits, said push buttons including an "off" push button operable generally upon the depression thereof to open all of the circuits, means responsive to the depression of said "off" push button for precluding direct depression of certain of the other of said push buttons, and means actuable by an operator for rendering ineffective said precluding means including one of said "off" push button and another of said push buttons.

4,362,913

COLLISION DETECTING DEVICE

Norio Kumita, Kariya; Takaaki Ori, Nagoya, and Seiichi Narita, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 1, 1981, Ser. No. 269,254

Claims priority, application Japan, Jun. 5, 1980, 55-78249[U]

Int. Cl.³ H01H *35/10*

U.S. Cl. 200—61.45 R **4 Claims**

1. A collision detecting device comprising:

a substantially cylindrical housing having an open end;

an end plate for closing the open end of said housing;

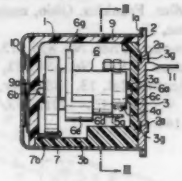
a pair of terminals fixed to said end plate;

a block disposed in said housing and having a longitudinally extending tab;

a cylindrical lid disposed in said housing opposite said block, said cylindrical lid defining a notched portion registrable with said longitudinally extending tab;

a wheel rotatably supported by said block and lid within said housing and having a cylindrical surface and a cam surface;

a pair of leaf springs fixed to said block, one end of each of said leaf springs being electrically connected to a respective one of said terminals and each of the other ends of said leaf springs being urged against and slidable on said cylindrical surface and said cam surface, respectively, said other ends of said leaf springs being normally spaced away from each other;



a spiral spring disposed in said housing and connected at one end of said wheel and at the other end to said longitudinally extending tab for biasing said wheel in a direction to move said other ends of said leaf springs away from each other; and

a weight member fixed to said wheel for rotating said wheel in a direction to cause said other ends of said leaf springs to engage each other when the force produced by said weight member in the event of a collision becomes greater than the spring force of said spiral spring thereby producing an electrical signal in response to the collision.

4,362,914

ELECTRICAL SWITCH APPARATUS

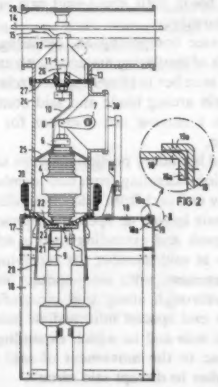
Erich Adolph, Frankfurt am Main; Ünal Bayrak, Bischofsheim; Robert Prohl, Nidderau, and Walter Stecker, Heusenstamm, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 24, 1980, Ser. No. 162,433

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927466

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **12 Claims**



1. An electrical switch apparatus comprising a substructure common to all phases, an attachment common to all phases having sidewalls and a top supported by the substructure at the top thereof, a feedthrough plate supported over an opening in the top of the attachment, a tank forming part of a metal encapsulation filled with an insulating gas supported by the feedthrough plate, at least one vacuum switching tube per phase

disposed in the tank, the vacuum switching tube including an axially stationary terminal at one end thereof, a cable termination coupled to the stationary terminal and extending into the attachment, the improvement comprising means on the top of the attachment for detachably connecting the top of the attachment to the sidewalls of the attachment.

4,362,915

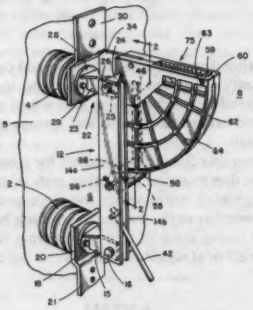
ELECTRIC ARC CONFINING DEVICE

David L. Swindler, Franklin, Ohio, assignor to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 879,013, Feb. 17, 1978, which is a continuation of Ser. No. 684,052, May 6, 1976. This application Jul. 13, 1981, Ser. No. 282,361

Int. Cl.³ H01H *33/08*

U.S. Cl. 200—144 R **9 Claims**



1. An electric arc confining and extinguishing device for a high voltage load interrupter switch including a pivotable arcing blade having a contact end lying along a radial line extending from the pivot of said blade for completing a circuit to a portion of a contact member in response to the engagement of said end with said contact member portion and generating an arc between said contact end and said member in response to the pivoting of said blade to disrupt said circuit with the contact end of said arcing blade following a circumferential blade path about said axis and extending from said contact member,

the device comprising an insulating arc chute having side walls of insulating material with each wall extending from said member in closely spaced relation to a respective side of said arcing blade and said contact end in said path to form a narrow arc chamber for said member and said blade,

a closed boundary portion between said walls, said boundary portion extending from said member and spaced from said blade end and from said circumferential blade path,

said chute having an open end intersecting said circumferential path and extending over a selected angle having an apex at said member for receiving said arcing blade for engagement with said contact member and movement therethrough along said circumferential path with said open end spaced intermediate said contact member and pivot axis and to which expanding arc gases flow in response to the movement of said contact end from said member to disrupt said circuit,

each of the side walls having an elongated first vortex generating groove defined by elongate end edges located between said contact member and said open end extending over an angle substantially equal to the selected angle of said open end and intersecting said circumferential path and the flow of expanding arc gases to said open end and substantially parallel to said open end for directing a first portion of said expanding arc gases in a direction intersecting another portion of said expanding arc gas to impede the flow of said expanding gases.

4,362,916

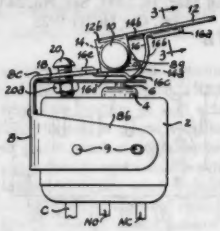
MINIATURE PRECISION SNAP ACTION SWITCH HAVING OPERATING LEVER PROVIDING LARGE OVERTRAVEL

Harry B. Anderson, Bradenton, Fla., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 23, 1981, Ser. No. 305,005

Int. Cl.³ H01H *3/04*

U.S. Cl. 200—153 T **12 Claims**



1. In a miniature switch having a housing enclosing switch contacts and an actuating element extending through the housing for movement to actuate the switch contacts, the improvement comprising:

operating means providing large overtravel comprising;

a mounting bracket secured to said switch housing;

support means on said mounting bracket extending from one side of said housing above and beyond said actuating element;

a pivot on said support means substantially over said actuating element;

an operating lever secured to said pivot for pivotal movement and having a cam member extending generally between said support means and said actuating element;

said cam member comprising a nib for moving said actuating element to actuate the switch contacts and a cam extending from said nib having a constant radius relative to said pivot to provide for large overtravel when said operating lever is pivoted in the turn-on-direction;

and means for biasing said operating lever in the turn-off direction.

4,362,917

FERRITE HEATING APPARATUS

George Freedman, Wayland, and Robert F. Bowen, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 29, 1980, Ser. No. 220,531

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E **5 Claims**

1. A microwave heating appliance comprising:

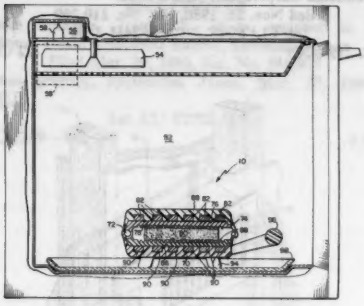
a metallic container for holding a food body, said container having a substantially vertical lip, said container reflecting microwave energy incident from underneath;

a microwave transparent base for supporting said container;

a corrugated metallic cover pivotally movable with respect to said base, said cover being supported by said food body, said cover further having substantially vertical sides spaced from and substantially parallel to said lip of said container for forming a microwave choke to shield the interior of said container from microwave energy; and

a microwave energy absorber comprising ferrite material bonded to the upper surface of said cover for absorbing

microwave energy at a substantial rate at temperatures below the Curie point region of said ferrite material while



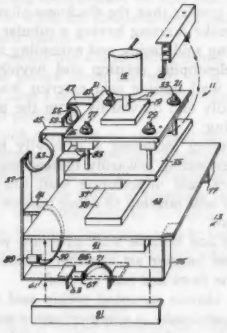
absorbing microwave energy at a substantially lower rate at temperatures above said Curie point region.

4,362,918

RADIATION ABSORBING APPARATUS

Simon Rabin, 1140 NE. 178th Ter., North Miami Beach, Fla. 33162

Filed Oct. 30, 1980, Ser. No. 202,338
Int. Cl.³ H05B *6/54*
U.S. Cl. 219—10.81 **22 Claims**



1. In combination with radio frequency (RF) dielectric heating equipment of the type having a supporting frame, RF power source, control circuits and timers, movable and stationary tools, means to move at least one tool, RF power conductive connections among the tools and the RF power source, an improvement therein by addition thereto of apparatus for absorbing unwanted radiation comprising:

at least one movable RF conductor conductively connected to a movable tool of the RF dielectric heating equipment;

a first stationary RF conductor conductively connected to a first point on a stationary tool work table;

a second stationary RF conductor conductively connected to a second point on the stationary tool work table;

RF conducting means to permit RF conduction between the movable conductor and the stationary conductors;

a first capacitor conductively interposed between the movable conductor and stationary conductors; and

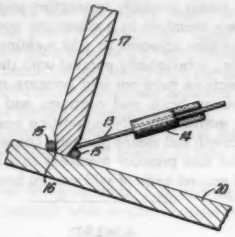
a second capacitor and an inductor electrically interposed between the first stationary RF conductor and the second stationary RF conductor.

4,362,919

METHOD OF WELDING USING A COVERED TUNGSTEN ELECTRODE

Alan H. Miller, Philadelphia, Pa., and Ira W. Reese, Yardville, N.J., assignors to Transamerica Delaval, Inc., Lawrenceville, N.J.

Filed Feb. 18, 1981, Ser. No. 235,642
Int. Cl.³ B23K *9/225*
U.S. Cl. 219—137 R **7 Claims**



1. A method for welding a plurality of blades of a centrifugal compressor impeller to the hub of said impeller, which comprises the steps of:

(a) preplacing a welding wire in the welding kerf formed on both sides of each impeller blade of said plurality of blades;

(b) tacking the welding wire so that the wire abuts the surface of the impeller blade and the hub;

(c) guiding a metal core electrode rod encased in a pre-sintered ceramic sleeve over the welding wire the bore of said sleeve being sized so as to prevent slippage on the core while allowing for sufficient clearance for the core to expand during torching and the working end portion of said core extends beyond said sleeve; and

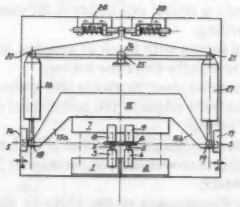
(d) torching the welding wire as the encased electrode is guided over the wire so that a uniform weld deposit is formed, thereby welding said impeller blade to said hub.

4,362,920

DOUBLE POINT RESISTANCE WELDING MACHINE

Hans Gött; Gerhard Ritter; Klaus Ritter, and Josef Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-u. Verwertungs-Gesellschaft m.b.H., Graz, Austria

Filed Apr. 2, 1981, Ser. No. 250,232
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—56 **4 Claims**



1. In a double point welding machine with a current bridge arrangement having, on one side of a welding plane, at least one pair of active electrodes which are spaced from one another to provide the double point welding interval and are adapted to be connected to a secondary side of a welding transformer; a current bridge carrying passive counter-electrodes for operative association with said active electrodes whereby welding pressure may be applied to a workpiece in

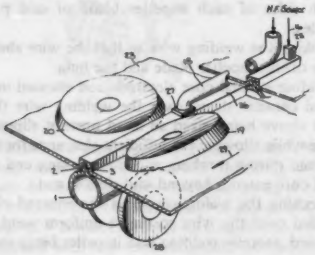
said welding plane between said active electrodes and said passive counter-electrodes; and means pivotally mounting said current bridge; an improved current bridge arrangement comprising a pressure beam supporting said current bridge; end portions of said pressure beam projecting substantially into said welding plane; guides running normally to said welding plane and cooperating with said pressure beam end portions for relative sliding thereof and tilting thereof in the plane of said pressure beam; two pressure members each having first and second ends; means pivotally connecting said first end of each of said pressure members to a respective one of said pressure beam end portions adjacent to said welding plane; a second beam extending substantially parallel with the line joining said pivotal connections between said pressure member first ends and said pressure beam end portions, and having first and second ends; means pivotally supporting said second beam at the centre thereof; and means pivotally connecting said second end of each of said pressure members to a respective one of said first and second ends of said second beam.

4,362,921

WELDING OF FINS TO TUBING

Wallace C. Rudd, New Canaan, Conn., assignor to Thermatool Corp., Stamford, Conn.

Filed Nov. 17, 1980, Ser. No. 207,467
Int. Cl.³ B23K *31/06*
U.S. Cl. 219—61.2 **11 Claims**



1. A method of manufacturing a panel element comprising fluid-tight, metal tubing secured along its length to metal sheet or sheets by metal which has been heated and cooled, said metal sheet or sheets being long and narrow, having the length thereof extending in the length direction of the tubing, having a width larger than the cross-sectional size of the tubing, and having a thickness which is small relative to the cross-sectional size of the tubing, said tubing being secured to the sheet or sheets intermediate lateral side edges of the sheet or sheets, said method comprising:

forming said tubing with a pair of abutting lips which extend radially outwardly from the tubing;

pressing the metal sheet or sheets into contact with said lips with lateral side edges of the metal sheet or sheets spaced from the tubing;

by heating means, heating the metal of both said lips and said sheet or sheets to welding temperature at least where they are in contact;

maintaining the pressing of the sheet or sheets against the lips when the metal thereof reaches welding temperature to cause the lips to become welded together and to cause the sheet or sheets to become welded to the lips; and

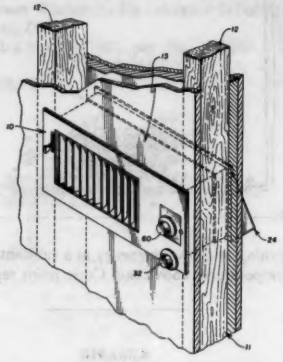
producing relative movement between the heating means, on the one hand, and the tubing and the sheet or sheets, on the other hand, in a direction longitudinally of the tubing and during the heating of the contacting metal of the tubing and the sheet or sheets to provide a substantially continuous weld between the tubing and the sheet or sheets which extends longitudinally of the tubing.

4,362,922

AIR MAKE-UP UNIT

Leroy E. Anderson, Detroit Lakes, Minn., assignor to Standex International Corporation, Salem, N.H.

Filed Nov. 26, 1980, Ser. No. 210,269
Int. Cl.³ F24F *7/013*; F24H *3/04*
U.S. Cl. 219—369 **22 Claims**



1. An air make-up system comprising:

(a) a frame building having a standard exterior wall with vertical studs having standard horizontal distances therebetween, said wall being of standard or greater thickness;

(b) an elongated metal casing mounted in an opening in said exterior wall between a pair of said studs and having a depth no greater than the thickness of said wall;

(c) an air intake housing having a tubular forward portion surrounding said casing and extending inwardly in close sliding telescoping relation and having an imperforate shielding wall outside said exterior wall and extending downwardly and outwardly from the upper portions of said housing;

(d) said housing including a generally horizontal screen member extending inwardly thereacross from the lower portions of said imperforate wall toward said tubular portion of said housing to admit outside air into the interior thereof;

(e) side, top and bottom wall structure within said casing defining an interior air chamber within said casing and open at the front and rear thereof;

(f) a rotary blower mounted within said air chamber and having an air-intake in communication with the interior of said housing and having a tangential discharge throat extending horizontally and inwardly therefrom;

(g) at least one electrical heating element mounted within said blower throat to warm the air driven thereacross by said blower;

(h) a vertical wall extending longitudinally of said casing and across the interior of said chamber and around said blower throat and sealing the interior of said housing from the interior of said building except for through said blower throat;

(i) insulation within said vertical wall completely surrounding and insulating the portions of said throat in which said heating element is mounted and insulating the interior of said housing and the outside air from the interior of said building;

(j) insulation within said side, top and bottom wall structure defining said chamber and completely insulating the outer surfaces of said walls and their surrounding wall structure from the heat generated by said heating element;

(k) a controllable electric motor mounted within said chamber and connected to said rotary blower in driving relation for driving the same and thereby causing a positive air pressure to be built up within said frame building; and

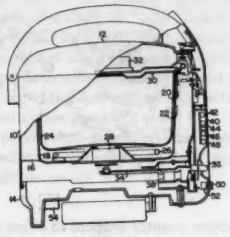
(l) means for energizing said heating element as desired.

4,362,923

RICE COOKER

Terutaka Aoshima, Toyohashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1981, Ser. No. 245,975
Claims priority, application Japan, Mar. 27, 1980, 55-41198[U]
Int. Cl.³ F27D 11/02
U.S. Cl. 219—441 4 Claims



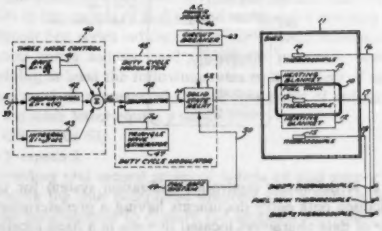
1. An electric rice cooker comprising:
a pot for containing rice and water;
a lid removably covering the top of said pot;
means for heating said pot;
thermally insulating frame means for supporting and enclosing said pot and said heating means;
means for detecting temperature of said pot to produce a detecting signal when the temperature of said pot reaches a predetermined value;
timer means for producing a first timing signal during a first predetermined period from the start of a rice cooking operation and then a second timing signal during a second predetermined period; and
drive means which responds to said first timing signal to drive said heater so as to provide a rated caloric value, to drive said heating means to provide a caloric value smaller than said rated caloric value in response to said second timing signal, and subsequently to drive said heating means so as to provide the rated caloric value until said detecting means produces the detecting signal.

4,362,924

TEMPERATURE ACHIEVEMENT CONTROLLER

Gene F. Story, Westminster, and John T. La Belle, Long Beach, both of Calif., assignors to Automotive Environmental Systems, Inc., Westminster, Calif.

Filed Feb. 15, 1980, Ser. No. 121,817
Int. Cl.³ H05B 1/02
U.S. Cl. 219—497 14 Claims



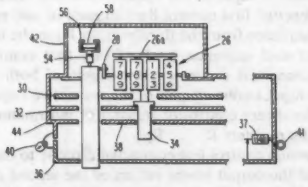
1. A temperature achievement controller for controlling the temperature of a device which is heated by a heating unit in accordance with a predetermined temperature versus time curve, said controller comprising:
temperature sensing means for producing an achieved temperature signal which corresponds to an achieved temperature of the device;
generating means for generating a desired temperature signal which varies with time in accordance with said predetermined temperature versus time curve;
initiating means responsive to said achieved temperature signal for causing said generating means to commence generating said desired temperature signal when said achieved temperature reaches a predetermined value;
error detecting means for producing an error signal proportional to the difference between said achieved temperature signal and said desired temperature signal;
differentiating means for generating a first signal proportional to the derivative with respect to time of said error signal;
integrating means for generating a second signal proportional to the integral with respect to time of said error signal;
proportioning means for generating a third signal proportional to said error signal; and
summing means for generating a control signal which comprises the sum of said first, second and third signals;
duty cycle modulating means for switching power supplied to the heating unit on and off with the ratio of the power on time period to the power off time period being proportional to said control signal;
whereby when said achieved temperature is less than said desired temperature, said power on/power off time ratio increases and when said achieved temperature is greater than said desired temperature said ratio decreases thereby maintaining said achieved temperature substantially at said desired temperature level.

4,362,925

VOTING MACHINE

Michael D. Paloian, Babylon, and Peter D. George, Mount Sinai, both of N.Y., assignors to Ransom F. Shoup & Company, Inc., Bryn Mawr, Pa.

Filed Sep. 3, 1981, Ser. No. 299,015
Int. Cl.³ G07C 13/00
U.S. Cl. 235—51 3 Claims

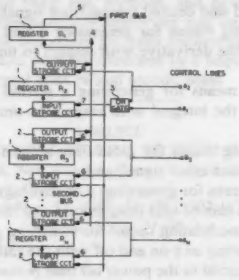


1. A voting machine of the type in which first locking means are provided to prevent resetting of counter means for counting the number of votes cast for a candidate except by authorized persons, additional counter means being provided to count the number of times said locking means are opened to permit said resetting, whereby security of said machine is enhanced.

4,362,926
BUS-REGISTER DEVICE FOR INFORMATION PROCESSING

Lyudmil G. Dakovski, and Nikola K. Kassabov, both of Sofia, Bulgaria, assignors to V M E I "Lenin", Sofia, Bulgaria

Filed Oct. 19, 1979, Ser. No. 86,428
Claims priority, application Bulgaria, Nov. 8, 1978, 41322
Int. Cl.³ G06M *3/08*
U.S. Cl. 235—92 CC 1 Claim



1. An information processing device comprising:

N, n-digit registers in a sequence $R_1, R_2, R_3, \ldots R_N$, each of said registers having an input and an output;

a respective input strobe circuit connected to the input of each register of said sequence from the second register R_2 to the last register R_N thereof, and a respective output strobe circuit connected to the output of each register of said sequence from the second register R_2 to the last register R_N thereof;

a first information bus connected directly to the output of said first register R_1 and to each of the input strobe circuits, and a second information bus connected directly to the input of said first register R_1 of the sequence and to each of said output strobe circuits, each of said input strobe circuits transferring information signals to the respective register $R_2 \ldots R_N$ from said first bus and each of said output strobe circuits transferring information signals from the respective registers $R_2 \ldots R_N$ to said second bus upon the application of a control signal to a respective control input of the respective strobe circuit;

respective first control lines to each of said registers of said sequence from the third register R_3 to the last register R_N of said sequence, each of said first control lines being connected to the control inputs of both the input and output strobe circuits of the respective register $R_3 \ldots R_N$ for direct control of transfer of information to and from the registers $R_3 \ldots R_N$;

a second control line connected directly to the control input of the output strobe circuit of the second register R_2;

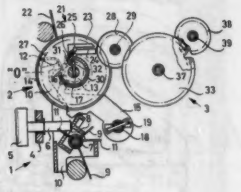
an OR-gate having its output connected to the control input of the input strobe circuit of the second register R_2 and a first input connected to said second control line; and

a third control line connected to a second input of said OR-gate whereby a signal applied to said third control line transfers the contents of said first register R_1 to said second register R_2 through said buses and signals applied to the respective lines effect parallel transfer of information between said registers.

4,362,927
PRESELECTION COUNTER WITH CONTINUOUS DISPLAY AND AUTOMATIC REPETITION OF A PRESET VALUE

Lothar Herrmann, Hornberg, and Helmut Müller, St. Georgen, both of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,613
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009018
Int. Cl.³ G06F *15/18*
U.S. Cl. 235—132 R 5 Claims

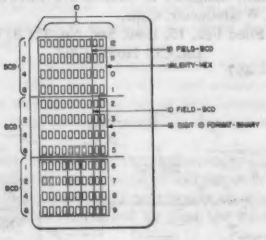


1. A preselection counter adapted to effect automatic repetition of a preset value and capable of maintaining a continuous display of said preset value during operation thereof comprising: switch-off counter means adapted to actuate a desired function when a quantity of said function determined by said preset value has been reached; presettable indicating means including number rollers adapted to be set at said preset value and to retain said setting until reset, said presettable indicating means being adapted to display said retained preset value; sensing wheel means operably interposed between said switch-off counter means and said presettable indicating means adapted to be placed in transmitting engagement therebetween to transmit the preset value on said indicating means to said switch-off counter means and to be removed from transmitting relationship therebetween during operation of said switch-off counter means to actuate said desired function; and means for resetting said sensing wheel means in accordance with the preset value on said presettable indicating means without altering the setting of said presettable indicating means.

4,362,928
UNIVERSAL DOCUMENT FORMAT SYSTEM

James R. Sheldon, Phoenix, Ariz., assignor to Engineered Systems, Inc., Tempe, Ariz.

Filed Jan. 12, 1981, Ser. No. 223,982
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—375 3 Claims



1. A document controlled utilization system for use with encoded data entry documents having a predetermined number of data characters located thereon in a fixed location with the data characters representing at least two different groups of information characters and having a format code character encoded therein in a predetermined position, said format code

character signifying which data characters are in each of such groups, said system including in combination;

document reading means for reading said data characters and said format code character from documents inserted therein;

utilization means for utilizing data encoded on said data entry documents and read by said document reading means and responsive to the data in each of said groups of data characters;

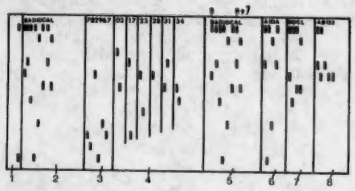
data processing means coupled with said document reading means for receiving data read thereby and including means responsive to the reading of said format code character by said document reading means for inserting a predetermined character in a predetermined location between two of said data characters to establish those data characters in each of said two groups of information characters, said predetermined location of said predetermined character being variable in accordance with the encoding of said format code character; and

means for supplying said data with said inserted predetermined character therein from said data processing means to said utilization means.

4,362,929
METHOD OF PREPARING INDEXES

Vincent M. Gevers, 96, Wouwstraat, Hove-Antwerp, Belgium

Continuation of Ser. No. 46,657, Jun. 16, 1970. This application May 16, 1972, Ser. No. 253,864
Int. Cl.³ G06F 7/12
U.S. Cl. 235—432 4 Claims



1. A machine process for making directories of word marks, comprising the steps of:

(a) recording each word mark on a data processing support in the form of a first series of machine readable indicia;

(b) feeding the thus obtained supports into a machine programmed to add to said first series of indicia a second series of machine readable indicia, each of said first and second series of machine readable indicia representing alphabetic characters, said second series of machine readable indicia corresponding to the word marks as transformed according to a predetermined objective alphabetic translation code which is applied to the letters of said word marks in a manner such that there is only one possible transformation permissible from the indicia of said first series to the indicia of said second series and a plurality of different first series indicia can be transformed to the same second series indicia, said alphabetic translation code applying at least the following rules to the letters of said word mark as represented by said first series of indicia:

(1) a double letter equals a single letter;

(2) CY equals SI;

(3) Y equals I;

(c) recording said second series of indicia on said supports;

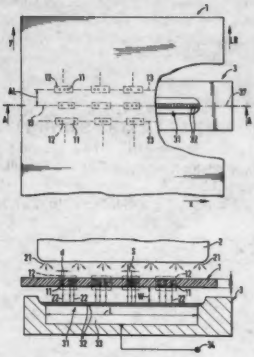
(d) feeding the thus completed supports into a sorting machine programmed to classify the supports according to the indicia of the second series; and

(e) printing by means of the thus classified supports the word marks corresponding to the indicia of the first series.

4,362,930
DATA CARRIER CARD

Kurt Ehrat, Steinmaur, Switzerland, assignor to Zeag Systems A.G., Schlieren, Switzerland

Filed Jan. 9, 1981, Ser. No. 223,848
Claims priority, application Switzerland, Jan. 10, 1980, 155/80
Int. Cl.³ G06K 21/04
U.S. Cl. 235—487 33 Claims



1. A data carrier comprising:

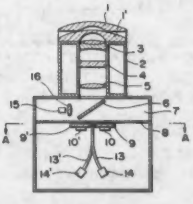
(a) a body of predetermined thickness having a layer which is opaque to radiation of a predetermined wavelength; and

(b) a plurality of conductors of said radiation extending through said layer, said conductors having a geometric distribution representing encoded information decipherable by a reader and being arranged in discrete groups, and the distance between neighboring conductors of a group being less than about twice said predetermined thickness, each of said conductors having a cross-sectional area at most equaling the square of said predetermined thickness.

4,362,931
SUN FOLLOWING-UP DEVICE FOR SOLAR HEAT UTILIZATION APPARATUS

Saburo Maruko, Yamato, and Kenji Yamada, Matsudo, both of Japan

Filed Dec. 4, 1980, Ser. No. 213,120
Claims priority, application Japan, Dec. 7, 1979, 54/158183
Int. Cl.³ G01J 1/20
U.S. Cl. 250—203 R 2 Claims



1. A sun following-up device for a solar heat utilization apparatus having a framework, a sunlight reflector rotatably supported on said framework, a pair of horizontal rotary shafts rotatably supporting said reflector on said framework and a vertical rotary shaft extending through the center of said reflector, said sun following-up device comprising a fish eye lens unit having the optical axis parallel to the optical axis of said

reflector, a series of vertically spaced lenses positioned below said fish eye lens unit, a screen glass positioned below said series of spaced lenses for forming an image thereon, a pair of spaced diffusion glasses positioned on the undersurface of said screen glass with a slit defined between the opposing faces of the diffusion glasses, photosensitive cells positioned on the undersurface of said diffusion glasses as sensor means for said vertical rotary shaft, optical fibers having one ends received in said slit leaving a clearance between the ends of the fibers and photosensitive cells secured to the other ends of said optical fibers as sensors for said horizontal rotary shafts, whereby said sensors control the vertical and horizontal rotary shafts to always align the optical axis of the reflector with the optical axis of the sunlight.

4,362,932

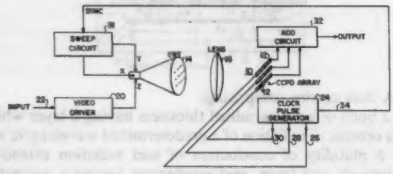
WIDE BAND DATA PROCESSING TECHNIQUE

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,568

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—203 CT **7 Claims**



1. A wide-band clock-controlled delay line having a high speed read-in and low speed read-out characteristic comprising:

an array of charge coupled devices;

energy scanning means for scanning said array of charge coupled devices with a beam of energy capable of modulating the charge in each charge coupled device in said array in accordance with the energy intensity of said beam during the dwell time of said beam on said charge coupled device, said scanning means having a scanning rate sufficient to operate on short pulses from a wide band system;

means for applying an input signal to said energy scanning means to control the intensity of said energy beam in accordance therewith;

signal processing means; and

clock pulse generator means coupled to said array of charge coupled devices for generating clock pulses for stepping out the charges stored in said array of charge coupled devices into said signal processing means.

4,362,933

MULTISTAGE VACUUM X-RAY IMAGE INTENSIFIER

Ulrich Kroener, Forchheim; Walter Greschat, Dormitz, and Peter Roemer, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

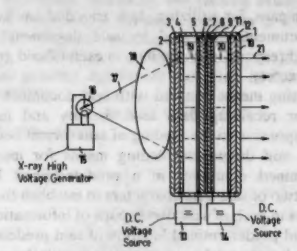
Filed Jan. 22, 1981, Ser. No. 227,472

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004351

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 VT **6 Claims**

1. A multistage x-ray image intensifier, comprising an inlet screen responsive to an x-ray image and producing an electron image which is intensified in an electrical acceleration field, and an outlet screen for supplying a corresponding visible image, an intermediate screen disposed between the end of the acceleration field and the outlet screen with at least one additional electric acceleration field commencing with the intermediate screen, and the intermediate screen comprising a light-transmissive carrier, a cathodoluminescent layer on the side of the carrier facing the inlet screen, and a photocathode layer on the opposite side of said carrier, said intermediate screen further comprising a coating (8) applied to said opposite side of the carrier (7), said coating (8) being resistant with respect to contamination of the photocathode layer (9) and having the photocathode layer (9) thereon.



4,362,934

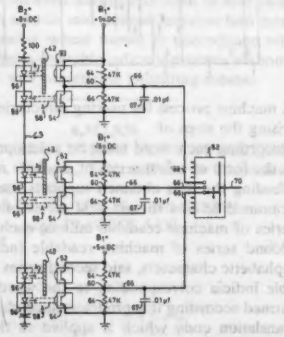
VELOCITY SENSING DEVICE USING OPTO-ELECTRONIC SWITCHES

David M. McLey, Scarboro, Canada, assignor to Syntronics Music Corporation, Toronto, Canada

Filed Apr. 8, 1981, Ser. No. 252,143

Int. Cl.³ G10C *3/12*; G01D *5/34*

U.S. Cl. 250—229 **10 Claims**



1. Keyboard for production of musical notes, comprising:

a plurality of keys,

a pair of optical detectors corresponding to each key,

each key being reversibly movable along a locus relative to said keys, from one end of said locus past a first location on said locus, past a second location to the other end of said locus,

cooperating means associated with each key and one of said corresponding detectors to cause a change of state of said one of said detectors when said corresponding key moves past a first location on said locus,

cooperating means associated with each key and the other of said corresponding detectors to cause a change of state of said other of said detectors when said corresponding key moves past a second location on said locus.

4,362,935

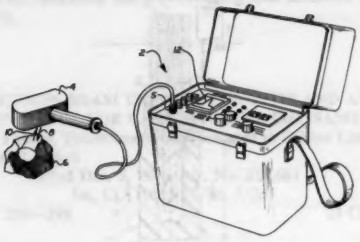
FIELD PORTABLE ELEMENT ANALYSIS UNIT

Benton C. Clark, III, Littleton, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Continuation of Ser. No. 10,716, Feb. 9, 1979, abandoned. This application Sep. 18, 1980, Ser. No. 188,594

Int. Cl.³ G01N *23/20*; G21K *1/00*

U.S. Cl. 378—48 27 Claims



1. An element analysis unit comprising:

sensor means including radiation means for irradiating a material to be analyzed, detector means for detecting radiation returned by said irradiated material and providing signals representative of said returned radiation, and means for providing an indication as to the type of said radiation means and said detector means included in said sensor means;

means for interconnecting said sensor means to a processing means; and

processing means for processing said signals representative of said returned radiation and responsive to said indication for adapting said processing in accordance with the type of said radiation means and said detector means included in said sensor means interconnected with said processing means, whereby sensor means having different said radiation means and/or different said detector means may be interconnected with said processing means and said processing means will be automatically adapted for operation therewith.

4,362,936

APPARATUS FOR MONITORING AND/OR CONTROLLING PLASMA PROCESSES

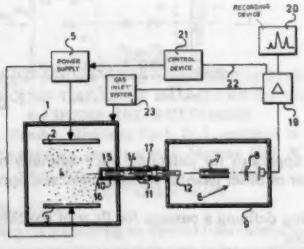
Dieter Hofmann, and Reiner Wechsung, both of Cologne, Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,596

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947542

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—292 4 Claims



1. Apparatus for monitoring a plasma process in which a plasma is formed to occupy a specified region between two electrodes spaced a predetermined distance from each other, said apparatus comprising, in combination:

mass spectrometer means including a mass analyzer having an ion inlet and an ion outlet and an ion detector disposed in operative association with said ion outlet;

output means connected to said detector for providing an output signal representative of the mass spectrum of ions observed by said mass spectrometer means;

ion-optical means oriented approximately at right angles to a line interconnecting the two electrodes, having an inlet opening located in the vicinity of the specified region and disposed for extracting ions from the plasma and focussing the ions thus extracted onto said ion inlet of said analyzer; and

a housing carrying said ion-optical means and having an open rear end facing said spectrometer means and a front end directed toward the specified region and provided with said inlet opening, wherein said housing is cylindrical and has a diameter which is less than one-fourth the distance between said electrodes.

4,362,937

ALPHA-RAY RADIATION SOURCE PHOTOGRAPHING DEVICE

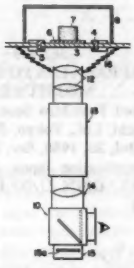
Katsuaki Nakajima, Tokai, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,391

Claims priority, application Japan, Dec. 10, 1979, 54-170698

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—306 6 Claims



1. An alpha-ray radiation source photographing device comprising a glove box, an optical window formed in a part of a wall of said glove box, an alpha-ray radiation scintillator, on which an alpha-ray radiation source-containing sample is placed, disposed within said glove box and adjacent to said optical window, and a photographing mechanism disposed outside said glove box such as to oppose said scintillator, said photographing mechanism including an optical multiplier tube, a close-up lens system and a camera, whereby alpha-ray radiation from said sample impinges upon said scintillator to emit light, and the emitted light advances through said optical window to the outside of said glove box and is amplified by said optical multiplier tube and photographed by said camera via said close-up lens system.

4,362,938

INFRARED VIEWING SYSTEM

David A. Bosserman, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1980, Ser. No. 206,913

Int. Cl.³ H01J *31/50*

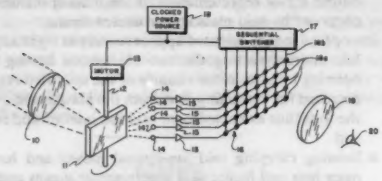
U.S. Cl. 250—332 2 Claims

1. An infrared viewing system including:

a column of infrared detectors each having an output;

means for scanning said column with respect to an infrared image;

a display matrix having a plurality of columns of light emitters, each column having emitters corresponding to respective detectors; and



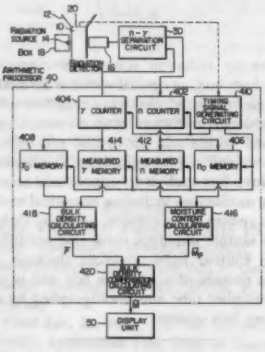
means for sequentially connecting the outputs of the columns of detectors to successive columns of the matrix whereby respective detector outputs of the column of detectors are connected to corresponding light emitters in the columns of light emitters as the scanning of the infrared image occurs.

4,362,939

METHOD AND APPARATUS FOR MEASUREMENT OF MOISTURE

Shoichi Horiuchi, and Yoshihiro Sase, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,600
Claims priority, application Japan, Aug. 1, 1979, 54-97346
Int. Cl.³ G01N *23/00*; G01T *3/00*
U.S. Cl. 250—358.1 **6 Claims**



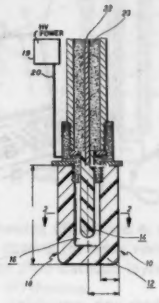
1. A method of measuring the moisture content of a bulk material comprising the steps of emitting fast neutrons and gamma radiation at a point on one side of the bulk material, detecting both the fast neutrons and the gamma radiation at the same point on the other side of the bulk material opposite to the point of emission of said radiation, separating and counting the fast neutrons and gamma radiation transmitted through the bulk material, and calculating the moisture content of the bulk material on the basis of the counted values of the fast neutrons and gamma radiation.

4,362,940

ZERO DISPLACEMENT IONIZATION CHAMBER

Peter R. Almond, Houston, Tex., assignor to Board of Regents, University of Texas Systems, Austin, Tex.

Filed Apr. 29, 1980, Ser. No. 144,840
Int. Cl.³ H01J *39/28*
U.S. Cl. 250—374 **13 Claims**



1. A displacement-free ionization chamber comprising:

a thimble chamber comprising:

a first electrode;

a second electrode spaced from said first electrode by a predetermined air gap, each of said first and second electrodes electrically connected to a voltage power supply;

said first and second electrodes comprising a material density balanced with said air gap density for producing an overall thimble chamber density substantially the density of water, whereby said chamber has an effective zero displacement when submerged in water; and

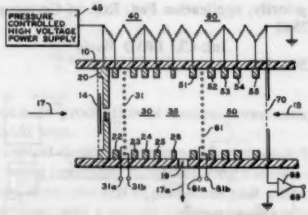
means for electrically connecting said first and second electrodes to a voltage power supply.

4,362,941

APPARATUS AND A METHOD FOR DETECTING AND MEASURING TRACE GASES IN AIR OR OTHER GASEOUS BACKGROUND

B. Wayne Castleman, Kenneth City, and Robert F. Donehoo, Clearwater, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 26, 1981, Ser. No. 228,407
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—381 **6 Claims**



1. An apparatus for detecting trace amounts of vapors or gases in air or other gaseous backgrounds, said apparatus comprising:

a housing defining a passage for flow of gas through a drift region;

a source of ionizing radiation positioned in said passage near a first end of said drift region for creating ions in said gas;

a collector electrode mounted within said passage near a second end of said drift region;

means for establishing a substantially linear drift potential in said housing for causing said ions to move through said drift region from said source of ionizing radiation toward said collector electrode;

means for varying said drift potential as a function of atmospheric pressure;

means for gating discrete packets of ions into said drift region; and

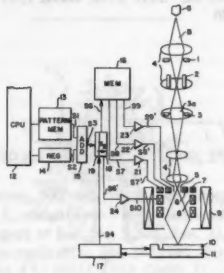
means for detecting the ions reaching said collector electrode.

4,362,942

ELECTRON BEAM EXPOSURE SYSTEM AND AN APPARATUS FOR CARRYING OUT THE SAME

Hiroshi Yasuda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 5, 1980, Ser. No. 213,681
Int. Cl.³ H01J 37/00, 3/26
U.S. Cl. 250—398 23 Claims



1. An electron beam exposure system in which a rectangular electron beam is radiated to a medium placed on a continuously moving stage comprising:

a processor for providing a deflection data of said electron beam;

means for providing a position data of said medium on said continuously moving stage;

means for providing a beam deflection amount data in accordance with both of said deflection data and said position data;

a correction memory for storing electron beam correction data for at least one of a field curvature, an astigmatism and a distortion corresponding to the deflection amount data of the electron beam; and

control means for adjusting said electron beam in accordance with said electron beam correction data corresponding to said deflection amount data read out from said correction memory.

4,362,943

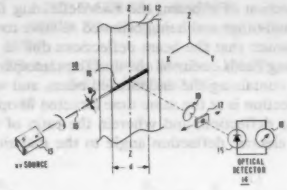
METHOD OF MEASURING THE REFRACTIVE INDEX PROFILE AND THE CORE DIAMETER OF OPTICAL FIBERS AND PREFORMS

Herman M. Presby, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1980, Ser. No. 185,202
Int. Cl.³ G01N 21/64
U.S. Cl. 250—459.1 6 Claims

1. A method of measuring an optical fiber/preform, comprising an inner core region containing an index-modifying dopant surrounded by an outer cladding, including the steps of:

illuminating a portion (16) of said fiber/preform with a beam (15) of ultraviolet radiation having a beam width at least an order of magnitude smaller than the diameter of said core region;



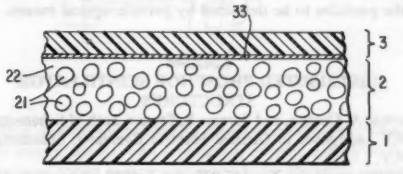
and measuring (14) the intensity of the fluorescence induced along said illuminated portion (16) by said ultraviolet radiation.

4,362,944

RADIOGRAPHIC INTENSIFYING SCREEN

Yujiro Suzuki, Odawara; Norio Mirua, Isehara, and Keiji Shimiya, Hiratsuka, all of Japan, assignors to Kasei Optonix Ltd., Tokyo, Japan

Continuation of Ser. No. 11,538, Feb. 12, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,377
Int. Cl.³ G01J 1/58
U.S. Cl. 250—483.1 4 Claims



1. A radiographic intensifying screen composed of a support, a fluorescent layer and a protective layer disposed in this order wherein said protective layer has a fluorescent layer side surface adjacent the fluorescent layer and an outer surface oppositely disposed from the fluorescent layer side surface and said fluorescent layer comprises one or more phosphors selected from the group consisting of a terbium activated rare earth oxysulfide phosphor, a divalent europium activated alkali earth metal fluorohalide phosphor and a silver activated sulfide phosphor, wherein light absorption material has been coated onto or dyed into the portion of the protective layer adjacent the fluorescent layer side surface thereof where said light absorption material absorbs a part of the light emitted by said fluorescent layer and where the portion of the protective layer adjacent said outer surface thereof is free of said light absorption material.

4,362,945

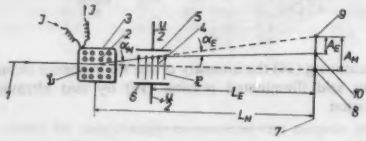
CHROMATICALLY CORRECTED DEFLECTING DEVICE FOR PARTICLE-BEAM EQUIPMENT

Wolfgang D. Riecke, Baden-Baden, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft Zur Förderung der angewandten Forschung e.v., Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,398
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937004
Int. Cl.³ H01J 3/26
U.S. Cl. 250—396 R 7 Claims

1. A chromatically corrected deflecting device for particle-beam equipment, particularly electron-beam equipment arranged to irradiate locations lying in or in close proximity to a common or working plane which is oriented perpendicular to

the axis of said equipment, wherein an electric deflecting field and a magnetic deflecting field are simultaneously employed for the deflection of a beam, the two deflecting fields being normal to each other and being oriented relative to each other in such a manner that the beam deflections due to the associated deflecting fields occur in one and the same plane, namely in the plane containing the undeflected beam, and wherein the electric deflection is at the same time directed in opposition to the magnetic deflection, and wherein the ratio of the magnitude of the electric deflection angle to the magnitude of the



magnetic deflection angle remains at a constant value which is independent of the resulting total deflection angle and is chosen such that the chromatic aberrations affecting the deflections due to the individual fields exactly compensate each other with reference to their effect on the beam position in said working plane, the constant value of the ratio of the magnitudes of the deflection angles being uniquely determinable as a function of at least one of (1) the distance of the deflecting fields from the working plane and (2) the energy and rest mass of the particles to be deflected by particle-optical means.

4,362,946

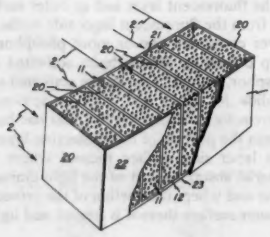
DISTRIBUTED PHOSPHOR SCINTILLATOR STRUCTURES

Dominic A. Cusano, and Jerome S. Prener, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 166,075, Jul. 7, 1980, abandoned, which is a division of Ser. No. 853,086, Nov. 21, 1977, Pat. No. 4,230,510. This application Jun. 11, 1981, Ser. No. 272,636

Int. Cl.³ G01T *1/164*; C09K *11/08*

U.S. Cl. 250—483 **14 Claims**



1. A method of manufacturing a detector array useful in computerized tomography, said detector employing dispersed phosphor scintillator bodies to increase detectable output at optical wavelengths when said bodies are excited by supra-optical radiation, said method comprising the steps of:

(A) mixing suitable phosphor particles with a nonreactive liquid matrix substance to form a suspension, said liquid matrix substance being hardenable, and transparent to optical and supra-optical radiation after hardening;

(B) transferring a portion of said suspension into each of a plurality of detector array compartments, said detector array being composed of

a housing having a front wall section substantially transparent to said supra-optical radiation, and a rear wall section, said detector array compartments being defined by a plurality of sidewall members extending orthogonal to said front wall section, said side wall members being opaque to said supra-optical radiation; and then

(C) causing said liquid matrix substance to harden, thereby fixing the position of said phosphor particles in said matrix, whereupon a greater fraction of optical wavelength photons, generated by said supra-optical radiation exciting the resulting scintillator bodies after passing through said front wall section, escapes to the exterior of said scintillator bodies for detection by a photoelectrically responsive detector.

4,362,947

IRRADIATION APPARATUS USING RADIOACTIVE SOURCES

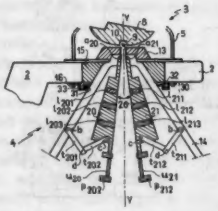
Claude Perraudin, Meudon; Edmond Amarge, Pringy; Jean P. Guiho, Le Mesnil St. Denis; Jean C. Horiot, St. Jullien; Gerard Taniel, Les Essarts Le Roi; Georges Viel, and Jean P. Brethon, both of Orsay, all of France, assignors to C.G.R.-MeV, Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 9, 1981, Ser. No. 223,725

Claims priority, application France, Jan. 11, 1980, 80 00614

Int. Cl.³ G21F *3/02*; G21K *1/04*

U.S. Cl. 378—150 **6 Claims**



1. An irradiation apparatus using at least one radioactive source and comprising a fixed support with which there is associated an arm movble about an axis X—X, an irradiation head comprising an enclosure made from a material impermeable to the radiation of the source and, in said enclosure, a first biological protection screen surrounding at least partially a second biological protection screen, said second screen having a housing for receiving the radioactive source, a primary collimator and a secondary collimation device comprising a conical pot made from a material impermeable to the irradiation beam and, integral with said conical pot with axis Y—Y, two pairs of frames, each of the frames, movable about a shaft fixed to said conical pot, being associated with a mechanical moving system, each frame having collimating plates disposed substantially perpendicularly to the frame on which they are fixed, each frame of the secondary collimation device is connected to the conical pot by means of a compass system formed from two legs hinged together about a shaft dd, one of the legs being rotatable about a shaft bb fixed to the conical pot and the other leg being rotatable about a shaft cc fixed to the frame considered, said shafts being parallel to the axis of rotation of the frame on which is fixed the compass system.

4,362,948

METHODS OF FILLING AND EMPTYING RADIATION SHIELDS

John A. Weissenfluh, 13212 Ridge Dr., Rockville, Md. 20850

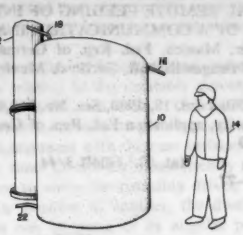
Filed Apr. 15, 1980, Ser. No. 140,527

Int. Cl.³ G21F *3/02*

U.S. Cl. 250—519.1 **3 Claims**

1. A free-standing radiation shield for use in installations containing sources of radiation, said radiation shield comprising a container of generally uniform thickness formed of thin flexible material and means for filling said container with a

radiation attenuating liquid, said radiation shield being many times taller than it is thick, being shaped such that said radiation shield is stable and free-standing, and being curved about an axis which is vertical when said radiation shield is in use.



4,362,949

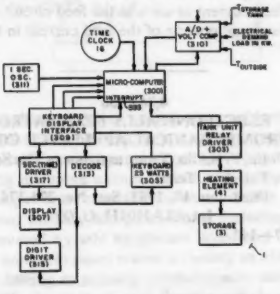
LOAD CONTROLLER HAVING TIME INTEGRATED DEMAND

James L. McKenney, Norwell, Mass., and Robert H. Stevenson, Barrington, R.I., assignors to Vapor Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 5,304, Jan. 22, 1979, Pat. No. 4,305,005. This application Jul. 15, 1981, Ser. No. 283,365

Int. Cl.³ H02J *4/00*; G05D *23/19*

U.S. Cl. 307—31 **10 Claims**



6. A controller for adjusting storage temperatures in a stored energy heater supplying continuous heat from electric power to a system heat load having varying heat demands, during predetermined, cyclic power off periods comprising;

means establishing power off and power on periods;

means measuring storage and load temperatures at predetermined times within said period;

means determining the heat storage level at said measurement time based on said storage and load temperatures;

means determining a current heat demand based on said load temperatures;

means determining a level of storage power input based on said demand and power on interval;

whereby tank storage is adjusted in a power on period to meet system demands during a succeeding power off period.

4,362,950

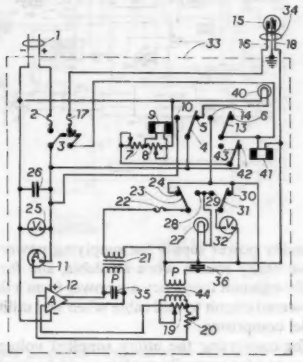
SYNCHRONOUS INVERTER COMPATIBLE WITH COMMERCIAL POWER

Joe S. Turner, 2825 S. Washington Ave., Apt. No. 614, Titusville, Fla. 32780

Filed Aug. 25, 1981, Ser. No. 295,994

Int. Cl.³ H02J *3/46*

U.S. Cl. 307—45 **1 Claim**



1. In a method for combining direct current energy from a minor source means with alternating current energy from a commercial power energy source to a home electrical distribution system, a compatible synchronous inverter means comprising an audio amplifier means, alternating current power cord male plug means and a switching circuit means for controlling said amplifier means and a dummy load, said minor source means having a direct current scale means and said distribution system having female receptacle means, said method for combining is accomplished in a compatible manner by using parallel connections and avoiding any series connections or disturbances to the commercial power source wiring to the home, said method comprising the steps of:

A. installing said inverter means by inserting said male plug means into a selected female receptacle means of the home electrical distribution system, and connecting said cable means for said minor source means to said inverter means,

B. connecting the output of said amplifier means to said home electrical distribution system, and further connecting said direct current energy from said minor source means for supplying power to said amplifier means,

C. detecting the direct current voltage available from said minor source means in accordance with a predetermined voltage range suitable for operation of said amplifier means, and disconnecting the input and output circuits of said amplifier means when said direct current voltage is not within said predetermined voltage range,

D. providing a small amount of alternating current voltage frm said home electrical distribution system as an input signal to said amplifier means to produce an output that is essentially the same in wave-shape, amplitude, phase and frequency as said input signal,

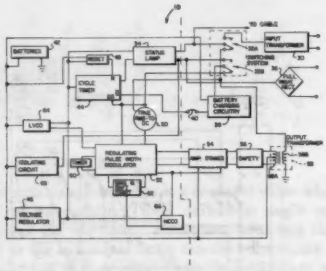
E. connecting a dummy load to the output of said amplifier means at all times when said output is not connected to said home electrical distribution system, and disconnecting said dummy load after said output is connected to said home electrical distribution system.

4,362,951

CYCLE CHARGE STANDBY POWER SYSTEM

Charles S. Turner, Dallas; Donald J. McNeal, Garland; Donald G. Cheshier, Garland, and James C. Gray, Garland, all of Tex., assignors to Control Technology, Dallas, Tex.

Filed Dec. 10, 1980, Ser. No. 215,005
Int. Cl.[3] H02J 9/06, 7/04
U.S. Cl. 307—66 17 Claims



1. A standby power supply for supplying power to a cable from an a-c utility source when available, and for supplying substantially constant frequency a-c power from a float service battery powered circuit to said cable when said utility source is unavailable, comprising:

means for converting the utility supplied voltage to cable voltage and for normally applying said converted voltage to said cable;

means for connecting said battery powered circuit to said cable upon failure of said utility source, and for reapplying said utility source to said cable upon restoration of said utility source;

a battery converting circuit converting the battery voltage to a-c voltage of substantially the same frequency as said utility source for application to said cable, said battery converting circuit comprising:

means for measuring a voltage applied to said cable by said battery converting circuit;

means for generating pulses of substantially constant frequency and of variable width, responsive to said voltage measuring means to vary the width of said pulses to maintain the voltage applied to said cable by said battery converting circuit substantially constant, despite decay in the battery voltage and despite varying loads applied to the standby power supply;

an amplifier controlled by said pulse generating means for amplifying said pulses to the voltage desired for application to said cable by said battery converting circuit;

means for charging said battery, including:

rectifying means for producing a d-c charging currrent from said a-c utility source;

means for measuring a desired time interval between charging cycles of said battery;

means responsive to said time measuring means for applying the charging current to said battery upon the elapsing of said time interval;

means responsive to a discharge condition of said battery for applying the charging current to said battery when said discharge condition falls below a predetermined level;

and means responsive to battery use for applying the charging current to said battery after said battery has been used to supply power to said cable;

means responsive to the voltage on said battery for removing said charging current from said battery when said voltage reaches a desired level; and

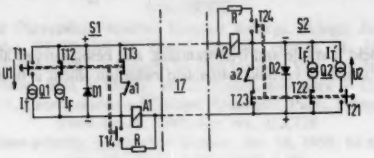
means responsive to said charging current removing means for resetting said clock means to initiate a succeeding desired time interval measurement.

4,362,952

APPARATUS AND METHOD FOR INITIATION OF RECIPROCAL REMOTE FEEDING OF INTERMEDIATE STATIONS OF A COMMUNICATION INSTALLATION

Alfred Ziegler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 169,952
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933439
Int. Cl.[3] H04B 3/44
U.S. Cl. 307—77 8 Claims



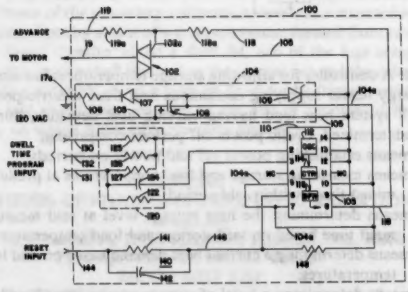
1. The method for starting-up two-sided remote feeding of intermediate stations of a communications installation, whereby, in a remote feeding circuit, designed for d.c. current-series feeding, a series connection of two feeding circuits interconnected via a feed wire pair is provided, each of which feeding circuits contains a constant current source, characterized in that, first, by means of one of the feeding circuits, a test current which is lower than the remote feed current, is fed into the feed wire pair, whereas the other feed circuit transmits remote feed current to a bridging-over branch, and the bridging-over branch is opened as soon as, in the feed circuit, feeding into the bridging-over branch, the test current or at least a specified fractional amount of the test current is ascertained in the feed wire pair, and in the feed circuit transmitting the test current, a change-over switch is actuated from the test current to remote feed current as soon as the feed circuit has at least a specified fractional portion of the feed current in the feed wire pair.

4,362,953

ELECTRONICALLY REGULATED ELECTROMECHANICAL APPLIANCE CONTROL

Donald E. Bolin, Franklin, Tenn., assignor to The Scott & Fetzer Company, Fairview, Tenn.

Filed Jun. 17, 1981, Ser. No. 274,374
Int. Cl.[3] H01H 43/00
U.S. Cl. 307—141 7 Claims



1. An electromechanical control regulated by an electronic timer, comprising:

a drive means;

a member rotatably driven by the drive means through a discrete plurality of angular positions, the member dwelling for a period of time at each of its angular positions, the member providing at least one switch actuating cam surface;

at least one cam follower type electrical switch means fixed in position relative to the rotatably driven member and engageable with the cam surface, the switch means being movable between conducting and nonconducting positions by engagement with the cam surface; and

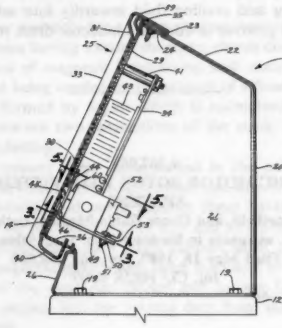
an electronic timer circuit for intermittently energizing the drive means to move the rotatably driven member from one angular position to another, the dwell time of the member at one or more of its angular positions being determined by the timer circuit.

4,362,954

POWER-UP CONTROL FOR MICROPROCESSOR BASED APPLIANCE

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Sep. 25, 1981, Ser. No. 305,558
Int. Cl.³ H01H *3/00, 13/70*
U.S. Cl. 307—142 **14 Claims**



13. An appliance control center, the combination comprising: a control center housing having an opening for providing access into said housing; panel means for substantially closing said opening including a front surface and further including a generally imperforate smooth flexible membrane layer overlying said front surface, said panel means including at least one opening covered by said membrane layer; and switch means associated with said panel means including an electromechanical switch having an actuator extending into said opening for contact with the rear of said flexible membrane layer and manually operable therethrough and further including touch switch means operable through said flexible membrane layer whereby said touch switch means and electromechanical switch are integrated into said control center to provide a control center including electromechanical and touch switches and having a smooth unbroken control surface.

4,362,955

CURRENT BOOST CIRCUIT FOR A PULSE GENERATOR OUTPUT STAGE

William H. Davenport, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 18, 1980, Ser. No. 217,954
Int. Cl.³ H03K *5/12*
U.S. Cl. 307—263 **3 Claims**

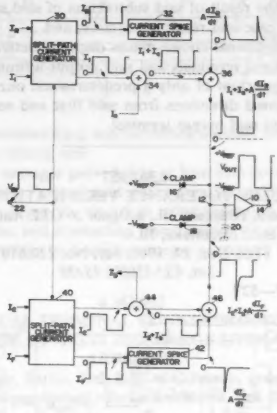
1. A pulse generator output stage, comprising:

means for receiving a voltage square-wave input signal;

means responsive to said input signal for generating a square-wave current;

means responsive to said input signal for generating boost currents substantially contemporaneous with the transitions of said input signal;

means for summing said square-wave current and said boost currents; and



an output amplifier responsive to said summed currents for generating a pulse voltage output signal,

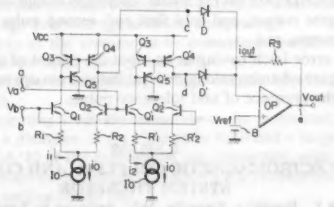
wherein said square-wave current generating means comprises a switched current source for developing the positive-going portion of said pulse voltage output signal and a switched current sink for developing the negative-going portion of said output signal.

4,362,956

ABSOLUTE VALUE CIRCUIT

Akira Ogasawara, Yokohama, and Ryuzo Motoori, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Japan

Filed Nov. 4, 1980, Ser. No. 203,903
Claims priority, application Japan, Nov. 22, 1979, 54-151468
Int. Cl.³ H03K *5/24*
U.S. Cl. 307—355 **6 Claims**



1. An absolute value circuit capable of providing, through an output terminal, a signal corresponding to the absolute value of the difference between a first input signal and a second input signal, comprising:

(a) first circuit means adapted for subtracting a current corresponding to said second input signal from a current corresponding to said first input signal, and for supplying to a first terminal a current corresponding to the result of said subtraction of a first direction in case said result is positive, and for supplying a current corresponding to the

result of said subtraction of a second direction opposite to said first direction in case said result is negative;

(b) second circuit means adapted for subtracting a current corresponding to said first input signal from a current corresponding to said second input signal and for supplying to a second terminal a current corresponding to the result of said subtraction of said first direction in case said result is positive, and for supplying a current corresponding to the result of said subtraction of said second direction in case said result is negative; and

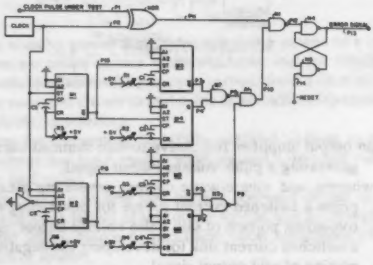
(c) uni-directional circuit means disposed between said first and second terminals and said output terminal for transmitting current of only a predetermined one of said first and second directions from said first and second circuit means to said output terminal.

4,362,957

CLOCK PULSE TOLERANCE VERIFICATION CIRCUIT

David R. Stern, Hinsdale, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,670
Int. Cl.[3] H03K *13/32*
U.S. Cl. 307—527 4 Claims



1. A system for verifying the presence synchronization and correct tolerance of a pulse train comprising:

a source of standard pulses,

an exclusive OR gate to which are inputted the pulse train to be tested and said standard pulses and having an output,

a first and a second pulse generating means operated in response to said standard pulses to output a first tolerance pulse at an acceptable time ahead of the desired start time for a pulse of said tested pulse train and a second tolerance pulse at an acceptable time ahead of the desired termination for a pulse of said tested pulse train,

a NAND gate having inputs connected to said exclusive OR gate output, and said first and second pulse generating means, and

an error latch having as an input the output of said NAND gate whereby said latch is inhibited from operation during the presence of said tolerance pulses.

4,362,958

ELECTROMAGNETIC COUPLING AND COOLING SYSTEM THEREFOR

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 3, 1980, Ser. No. 203,306
Int. Cl.[3] H02K *9/00*
U.S. Cl. 310—59 19 Claims

1. An electromagnetic coupling comprising:

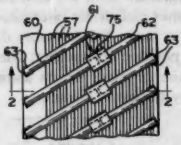
(a) a housing;

(b) a rotor member disposed in said housing;

(c) inductor drum means disposed in said housing and rotatable about an axis of rotation relative to said rotor member;

(d) coil means for producing an electromagnetic field for electromagnetically coupling said rotor member and said inductor drum means;

(e) said inductor drum means including a generally cylindrical drum portion, said drum portion defining an outer, heat-dissipating surface, said heat-dissipating surface including a plurality of circumferentially extending, heat-dissipating grooves spaced apart along the longitudinal axis of said cylindrical drum portion;



(f) means for directing cooling fluid into said housing to dissipate heat generated in said inductor drum means; and

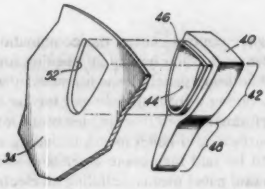
(g) a plurality of fluid-directing means attached to said outer, heat-dissipating surface of said inductor drum means for rotation therewith, said fluid directing means being obliquely disposed relative to said axis of rotation for directing said cooling fluid inwardly into said heat-dissipating grooves to cool said inductor drum means.

4,362,959

ELECTRIC MOTOR ROTOR WITH FITTED VENT SPACERS

Robert G. Bartheld, and Oscar Rubio-Medina, both of Cincinnati, Ohio, assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed May 15, 1980, Ser. No. 150,086
Int. Cl.[3] H02K *9/00*
U.S. Cl. 310—64 10 Claims



1. In a dynamoelectric machine including a rotor having a plurality of rotor bars arranged in a generally circular array and extending axially through said rotor, said rotor being formed of a stack of laminations, said laminations being axially spaced at at least one point along the stack to form a vent extending in a plane perpendicular to the axis of the rotor, a plurality of spacers disposed between confronting laminations to space said laminations apart to thereby form the vent;

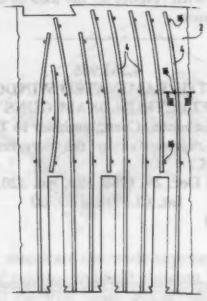
said spacers having substantially flat, parallel opposed end surfaces and having an opening extending therethrough for receiving rotor bar material, said spacers further comprising a radially outer portion surrounding a rotor bar and a radially inner portion extending radially inwardly from said rotor bar, said spacers each having a projection upstanding from at least one of said flat end surfaces, at least one of the laminations confronting said spacers having a depression therein for receiving said projection.

4,362,960

SPACER ASSEMBLY FOR A STATOR VENTING DUCT OF AN ELECTRIC POWER MACHINE

Roger Gillet, Belfort, France, assignor to Societe Anonyme Dite: Alsthom-Atlantique, Paris, France

Filed Apr. 30, 1981, Ser. No. 259,274
Claims priority, application France, Apr. 30, 1980, 80 09763
Int. Cl.³ H02K 1/32
U.S. Cl. 310—65 4 Claims



1. A spacer assembly for a stator venting duct of an electric power machine having a stator magnetic circuit constituted by an axial stack of magnetic laminations, said stack being held clamped and being cooled by circulation of a fluid in venting ducts each formed by a gap which is maintained by spacer members between two laminations of the stack, said spacer assembly including:

a metal support sheet incorporated in the axial stack of magnetic laminations to constitute one side of the venting duct therein, said metal support sheet having an inner surface on the venting duct side and an outer surface on the opposite side, said metal support sheet being of the same magnetic quality and same thickness as the laminations of the magnetic circuit and having fixing means which project into the venting duct from said inner surface; and

spacer members fixed on said inner surface of said metal support sheet by means of said fixing means so as to maintain the gap which forms a venting duct between said surface and the adjacent magnetic lamination on the other side of the venting duct; and

wherein said spacer members comprise flexible rods made of an insulating material extending lengthwise in the plane of the gap, having a thickness coextensive with the thickness of said gap, and wherein said fixing means constitute a succession of at least three side stops for each of said flexible rods, said side stops being disposed alternately on either side of each rod and out of line so as to keep each rod elastically bent in the plane of the gap providing permanent lateral pressure of the rod by deformation on each of the stops.

4,362,961

ENCAPSULATED PIEZOELECTRIC RESONATOR DEVICE

Karl-Heinz Gerber, Granges, Switzerland, assignor to Ebauches, S.A., Switzerland

Filed Jul. 1, 1980, Ser. No. 165,213
Claims priority, application Switzerland, Jul. 6, 1979, 6341/79
Int. Cl.³ H03H 9/24
U.S. Cl. 310—370 6 Claims

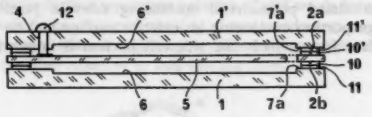
1. An encapsulated piezoelectric resonator device comprising:

an oscillating member including a quartz member and a frame integral with and surrounding said quartz member, said frame having two connecting faces;

electrodes provided on said quartz member;

two cover members, each having a central depression defining a frame provided with a connecting face;

connecting layers covering said connecting faces for bonding and sandwiching said oscillating member between said cover members; and



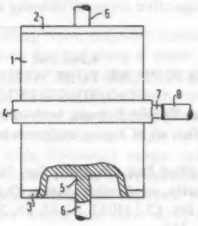
conductor passages provided in at least one cover member and passing through said cover member; said conductor passages being in electrical communication with said electrodes, said connecting layers having no contact with said electrodes and said conductor passages.

4,362,962

ELECTRICAL TERMINAL CONNECTION FOR THE ELECTRODES OF A GAS DISCHARGE OVER-VOLTAGE ARRESTER

Gerhard Lange, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,769
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006193
Int. Cl.³ H01J 5/50
U.S. Cl. 313—331 12 Claims



1. An electrical terminal connection system for electrodes of a gas discharge over-voltage arrester, comprising:

an electrode of the arrester to be connected comprising a high current conductivity material;

a connection wire comprising a high current conductivity material;

a peg projecting from the electrode to be connected and having a diameter of approximately 9/10 and a length of 5/10 to 8/10 of the diameter of the connection wire; and

an end surface of the connection wire being welded blunt to an end surface of the peg.

4,362,963

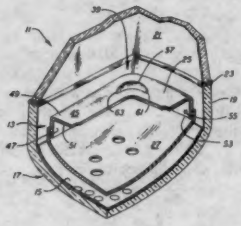
STRENGTHENED CRT APERTURE MASK FRAME

Peter G. Puhak, Seneca Falls, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,176
Int. Cl.³ H01J 29/07
U.S. Cl. 313—407 6 Claims

1. An improvement in the metallic perimetrical framing member of a substantially rectangular aperture mask-frame assembly of the type positioned in a color cathode ray tube in

spaced relationship within the viewing panel adjacent the cathodoluminescent screen disposed thereon; said framing member being an integration of top, bottom and side elements transitionally combined at angular corner regions to provide a continuous perimetrical supporting structure having X and Y axes of reference therethrough; said member evidencing a substantially L-shaped cross-sectional configuration having a substantially formed ledge portion instanding from an integral edge-related perimetrical upstanding sidewall portion, said ledge portion evidencing an exterior surface and an interior surface from which said sidewall portion is in substantially



perpendicular relationship; said sidewall having a terminal contour whereupon the apertured mask member of said mask-frame assembly is subsequently positioned and affixed, said improvement being means for strengthening the angular corner regions of said framing member and comprising:

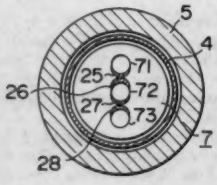
a substantially crescent-shaped indentation, having concave and convex edges and rounded termini, formed in said ledge portion at each of said corner regions; each of said crescent shapings being oriented with said concave edge thereof facing the origin of said axes; and whereof a bisector of each of said corner regions is substantially a bisector of the respective crescent shaping associated therewith.

4,362,964

COLOR PICTURE TUBE WITH A MAGNETIC FOCUSING DEVICE

Soichi Sakurai; Kyohei Fukuda, both of Mobara, and Masanobu Takata, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 89,095
Claims priority, application Japan, Oct. 30, 1978, 53/132669
Int. Cl.³ H01J *29/52, 29/56, 29/50*
U.S. Cl. 313—414 **17 Claims**



11. In a color picture tube with a magnetic focusing device and having a plurality of electron guns arranged in a row in a horizontal direction in a neck portion of the tube, a pair of magnetic plate members each provided with plural through-holes of circular shape corresponding to the respective electron guns and permitting electron beams emitted from the corresponding electron guns to pass therethrough, the plate members being disposed apart from each other in an axial direction of the tube, and magnetizing means for magnetizing one of the magnetic plate members in one polarity and the other one of the magnetic plate members in the other polarity, the improvement comprising the magnetic plate members each being provided with magnetic flux concentration means for partially concentrating the magnetic flux to be greater at peripheral side portions of the through-holes of the magnetic plate member in a hole alignment direction than the concentration of the magnetic flux at peripheral portions of the through-holes of the magnetic plate member in a direction orthogonal to the hole alignment direction so as to form magnetic focusing lenses between mutually corresponding through-holes of the pair of magnetic plate members having a symmetrical magnetic field distribution with respect to the axis of each of the magnetic focusing lenses.

4,362,965

COMPOSITE/LAMINATED WINDOW FOR ELECTRON-BEAM GUNS

John S. Kendall, Lebanon, Conn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 29, 1980, Ser. No. 220,321
Int. Cl.³ H01J *33/00*
U.S. Cl. 313—420 **1 Claim**

1. A composite window having a low electron cross-section and improved electron transmission characteristics for use with high-power, high energy electron-beam guns wherein the environment of use includes a high vacuum on the electron beam entrance side of the composite window and a high pressure on the electron beam exit side of the composite window, said composite window comprising:

(i) a first material of a polyester film for supporting a low-Z metal layer, said polyester film having a low-Z of about 4.5 and a higher-strength than the low-Z metal layer;

(ii) a second material in the form of a layer of a low-Z metal in intimate contact with said polyester film, said low-Z metal layer being an aluminum layer in the form of a foil which is laminated with said polyester film, or an aluminum layer which is vapor deposited on said polyester film, said low-Z metal layer having good heat transfer characteristics for removing energy deposited in the low-Z metal layer due to the electron beam which first penetrates the low-Z metal layer on the beam entrance side of said composite window, said composite laminated window having a thickness of up to about 1 mil.; and,

(iii) a plurality of fluid cooled, spaced apart foil support members for supporting and cooling said composite window, said support members being spaced apart about 0.1 inch, said composite window having an improved electron transmission at 100 keV that rises from about 62 percent when measured on the exit side of a 2 mil thick aluminum window to about 85 percent when measured on the exit side of said composite window.

4,362,966

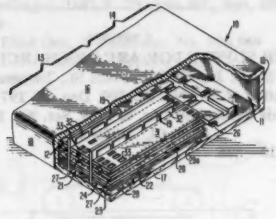
ELECTRON LEAKAGE REDUCTION IN FLAT PANEL DISPLAY DEVICES

Thomas L. Credelle, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,741
Int. Cl.³ H01J *29/72, 29/08*
U.S. Cl. 313—422 **9 Claims**

1. In an electron display device having an evacuated envelope including a faceplate, a backplate and a side wall, a phosphor screen on said faceplate, a plurality of vanes dividing said

envelope into a plurality of channels, means for providing at least one electron beam, means in each of said channels for propagating said electron beam longitudinally along said channels substantially parallel to said screen, means extending along said backplate for selectively directing said electron beam toward said screen, and scanning means on said vanes for scanning said electron beam transversely across said channels so that each channel contributes a portion of a visual display on said screen, an improvement wherein:



said scanning means are electrode segments separated in the direction of said longitudinal electron beam propagation so that said electron beam sequentially propagates past said segments; and

means for applying a varying voltage to a first portion of said segments to scan said electron beam transversely across said channels and means for applying a deflection voltage to a second portion of said segments to deflect leakage electrons away from said screen.

4,362,967

GAS DISCHARGE DISPLAY DEVICE WITH AT LEAST ONE SPACING FRAME WHICH LIMITS THE POST-ACCELERATION CHAMBER

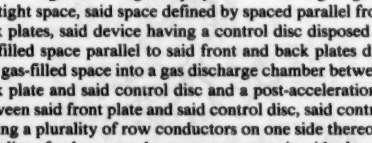
Burkhard Littwin, Hohenschaeftlarn, and Wilhelm Huber, Goldach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,696

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952528

Int. Cl.³ H01J *17/49*

U.S. Cl. 313—493 **14 Claims**



1. In a gas discharge display device having a gas-filled, gas-tight space, said space defined by spaced parallel front and back plates, said device having a control disc disposed in said gas-filled space parallel to said front and back plates dividing said gas-filled space into a gas discharge chamber between said back plate and said control disc and a post-acceleration space between said front plate and said control disc, said control disc having a plurality of row conductors on one side thereof and a plurality of column conductors on an opposite side thereof and being perforated at points of intersection of said row and column conductors, said front plate having a luminescent screen thereon with an anode layer and said back plate having at least one cathode, the improvement of:

at least one spacing frame surrounding said post-acceleration chamber and defining a lateral boundary thereof at an interior of said spacing frame,

said interior of said spacing frame being substantially coincident with the boundary of an active portion of said luminescent screen,

said spacing frame being attached by a sealing material to said control disc and said back plate in an air tight fashion, and said spacing frame having a width such that said sealing material when applied externally does not penetrate said post-acceleration chamber, said spacing frame further separating portions of said anode layer on said front plate and portions of said conductors on said control disc at edge regions of said post-acceleration chamber adjacent to said spacing frame.

4,362,968

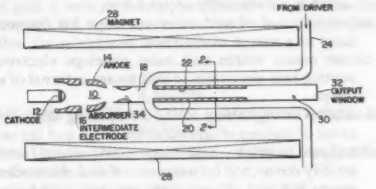
SLOW-WAVE WIDEBAND CYCLOTRON AMPLIFIER

Kwo R. Chu, Annandale, Va.; Phillip A. Sprangle, and Victor L. Granatstein, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1980, Ser. No. 162,702

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **8 Claims**



1. A gyrotron travelling wave amplifier comprising:

wave-launching means for launching a wave;

beam producing means for forming an annular beam of electrons propagating along a path with velocity V_z;

a dielectric lined slow-wave structure for slowing the group velocity, V_g, of the wave so that $V_z \times V_g$ wherein V_g is constant over a wide frequency range; said slow wave structure being coupled to said wave launching means and said beam producing means so that said wave and said beam co-propagate within said slow wave structure, and wherein said wave interacts with and is amplified by said electron beam; and

means for generating a magnetic field B, within said slow wave structure, for causing cyclotronic motion of the electrons in said beam wherein the magnitude, B_o, of said magnetic field is adjusted so that the interaction between said wave and said beam is due to electron bunching caused by the $V_\perp \times B_\perp$ Lorentz force, where $V_\perp$ is the traverse velocity of an electron in said electron beam and $B_\perp$ is the magnetic field of said wave.

8. A method of amplifying a wave in a gyrotron traveling wave amplifier dielectric lined waveguide comprising:

launching a wave, with magnetic field $B_\perp$ and group velocity V_g, into the waveguide;

injecting an annular electron beam into the waveguide wherein the beam velocity is V_z;

slowing the wave in the waveguide so that $V_g = V_z$;

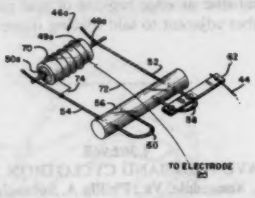
generating a magnetic field, B_o, about said electron beam wherein the cyclotron frequency of the electrons in said electron beam is determined by B_o; and adjusting the amplitude of B_o so that the wave is amplified by the beam due to bunching caused by the $V_\perp \times B_\perp$ Lorentz force where $V_\perp$ is the transverse velocity of the electrons in the beam.

4,362,969

HIGH INTENSITY DISCHARGE LAMP INCLUDING ARC EXTINGUISHING MEANS

Harold L. Rothwell, Rowley, and W. Calvin Gungle, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 27, 1981, Ser. No. 257,847
Int. Cl.³ H01J 7/44
U.S. Cl. 315—73 **6 Claims**



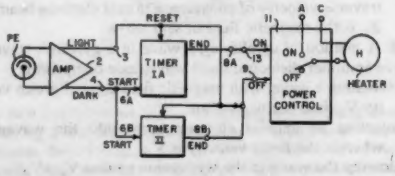
1. A high intensity discharge lamp having:
an inner arc tube having at least two electrodes between which a discharge takes place to produce visible light and ultraviolet radiation;
and an outer envelope substantially transparent to said visible light and substantially opaque to said ultraviolet radiation, said outer envelope containing an inert atmosphere which is substantially oxygen free;
means external of said outer envelope for connecting said lamp to a source of electrical power;
circuit means within said outer envelope electrically connecting said electrodes to said means external of said outer lamp;
and lamp extinguishing means for opening said circuit in the event of rupture of said outer envelope and the entrance of oxygen thereinto, said lamp extinguishing means being serially connected between one of said electrodes and said means external of said outer envelope and being characterized by a fuse comprising: a meltable fuse wire have a given melting point, a given diameter and a given length, at least a portion of said given length being surrounded by a refractory hollow sleeve having an internal dimension larger than said given diameter; a pyrophoric material substantially filling the remaining volume of said sleeve; and a tungsten, heat generating coil serially connected between said fuse wire and said one electrode, said coil surrounding said sleeve.

4,362,970

ENERGY CONSERVING ELECTRICAL POWER CONTROL CIRCUIT

John K. Grady, 277 Baker Ave., Concord, Mass. 01742

Filed Sep. 8, 1980, Ser. No. 184,991
Int. Cl.³ H05B 37/02
U.S. Cl. 315—159 **1 Claim**



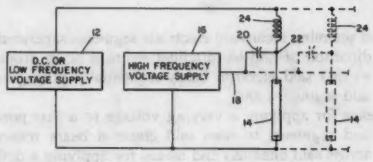
1. A power control circuit comprising:
a photoelectric device for sensing changes between light and dark;
a timer coupled to the device including means timing a delay period starting when the device senses a light change;
power control means having a power output and actuated by the timer to switch between power-off and power-on states at the output,
wherein the timer and power control means are connected to switch the power control means to power-on state at the end of the delay period, and
including a second timer responsive to a change in the photoelectric device to start timing a second delay period longer than the first said delay period, the second timer being connected to the power control means to switch the power control means to power-off state at the end of the second delay period.

4,362,971

POWER SUPPLY FOR ARC DISCHARGE DEVICES

Hiram C. Sloan, Jr., 5116 W. 190th St., Torrance, Calif. 90503

Continuation of Ser. No. 865,900, Dec. 30, 1977, abandoned.
This application Dec. 6, 1979, Ser. No. 100,869
Int. Cl.³ H05B 41/39
U.S. Cl. 315—176 **24 Claims**



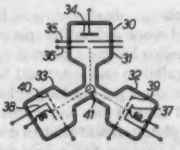
1. A power supply circuit for arc discharge devices including a first relatively low voltage source having means for connection to an arc discharge device and continuously supplying voltage at a level insufficient to conduct current in an arc discharge device until ionization has occurred in the device and having a power capability whereby it supplies a significant portion of the power to the device, and a second relatively high voltage power source having means for connection to the arc discharge device and continuously supplying voltage at a level sufficient to cause ionization in the device.

4,362,972

THYRATRONS

Timothy P. Donaldson, Great Totham, England, assignor to English Electric Valve Co. Limited, Chelmsford, England

Filed Dec. 10, 1980, Ser. No. 214,880
Claims priority, application United Kingdom, Dec. 11, 1979, 7942655
Int. Cl.³ H01J 17/14
U.S. Cl. 315—338 **5 Claims**



1. A thyratron having:
two cathodes and one anode, such that there are two distinct current pathways through the thyratron having a common section of significant length; and
switching means for switching the current between the current pathways, which switching means comprises in part magnetic-field-producing means in operation producing a plasma-diverting magnetic field acting at the cathode

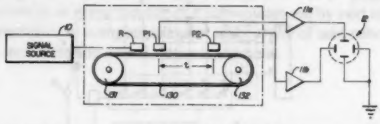
end of the common pathway section, with the position and direction of the field lying across the common pathway section so as to divert the current-carrying plasma away from one and towards the other of the pathways, whereby the current flowing along the one pathway is extinguished and replaced by a current flowing along the other pathway.

4,362,973

AESTHETICALLY PLEASING CRT-DISPLAY OF SINGLE-SOURCE SIGNALS

Brent R. Brentlinger, 1645 E. Thomas Rd., Apt. 409, Phoenix, Ariz. 85016

Filed Dec. 1, 1978, Ser. No. 965,569
Int. Cl.³ H01J *29/72*
U.S. Cl. 315—393 **4 Claims**



1. In a cathode ray tube (CRT) having the necessary associated power supplies and sweep deflection means to produce a visually discernable image on the screen of said CRT when signals are applied to said deflection means a method of producing Lissajous figure imagery on said screen when the signals applied to said deflection means are derived from a common signal source comprising the steps of:

(a) applying a first part of said signal from said common signal source to deflection means producing a first sweep deflection of the electron beam of said CRT;

(b) applying a second part of said signal from said common signal source through a time delay element to deflection means producing a second sweep deflection of said electron beam at an angle displaced from that of said first sweep deflection,

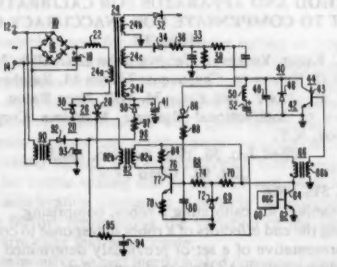
whereby the deflection imagery derived on the screen of said CRT is the instantaneous resultant of said first and said second sweep deflections of said electron beam.

4,362,974

COMMUTATED SWITCHED REGULATOR WITH LINE ISOLATION FOR TRANSISTOR DEFLECTION

Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 19,581, Mar. 12, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,275
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—408 **16 Claims**



1. A regulated television deflection apparatus adapted to be energized by and isolated from a source of unregulated direct voltage, comprising:

regulator switch means including a controlled, main, current path and a control electrode;

a transformer including a primary winding serially coupled with said main current path and with said source for coupling energy from said source to said primary winding when said main current path is conductive in a first direction, said transformer further including a secondary winding conductively isolated from said primary winding;

a deflection winding coupled across said secondary winding for forming a path for the bidirectional flow of current therebetween;

a trace switch coupled in parallel with said deflection winding and operated at the horizontal rate for promoting the flow of deflection current in said deflection winding during trace and retrace intervals of each deflection cycle; and

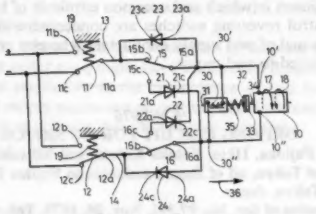
control means coupled to said control electrode and to an energy sensing point on the apparatus for making said main current path conductive at a controllable instant during said trace interval that varies as said unregulated direct voltage varies for maintaining the voltage at said point substantially constant, said main current path remaining conductive after said controllable instant until the occurrence of said retrace interval when the voltage across said deflection winding is applied to said secondary winding for inducing a current in said primary winding that reduces the current in said main current path to zero during said retrace interval and thereafter said main current path is substantially nonconductive in said first direction until the reoccurrence of said controllable instant within the subsequent trace interval.

4,362,975

DEVICE FOR CONTROLLING A BIDIRECTIONAL DC MOTOR

Jean-Vitus Orsini, Marignier, France, assignor to Etablissements Carpano & Pons, France

Filed Oct. 22, 1980, Ser. No. 199,570
Claims priority, application France, Nov. 14, 1979, 79 28508
Int. Cl.³ H02P *1/00*
U.S. Cl. 318—293 **2 Claims**



1. A device for controlling a reversible DC electric motor having first and second terminals comprising:

current supply conductors having positive and negative terminals,

a first control reversing switch having a common terminal, a first control terminal connected with the positive supply terminal, a second control terminal connected with the negative supply terminal, and a movable element movable between a first position in which it connects said common terminal with said first control terminal and a second position in which it connects said common terminal with said second control terminal,

a first ON-OFF switch having a common terminal connected with a first terminal of said motor, a first control terminal connected with said common terminal of said first control reversing switch, a second control terminal, and a movable element movable between a first position in which it connects said common terminal with said first

control terminal and a second position in which it connects said common terminal with said second control terminal,

a first unidirectional element connected in parallel with said first ON-OFF switch with said movable element in said first position,

a second control reversing switch having a common terminal, a first control terminal connected with the positive supply terminal, a second control terminal connected with the negative supply terminal, and a movable element movable between a first positionin which it connects said common terminal with said first control terminal and a second position in which it connects said common terminal with said second control terminal,

a second ON-OFF switch having a common terminal connected with a second terminal of said motor, a first control terminal connected with said common terminal of said second control reversing switch, a second control terminal, and a movable element movable between a first position in which it connects said common terminals with said first control terminal and a second position in which it connects said common terminal with said second control terminal,

a second unidirectional element connected in parallel with said second ON-OFF switch with said movable element in said first position

a third unidirectional element connected between said second control terminal of said first ON-OFF switch and said common terminal of said second ON-OFF switch,

a fourth unidirectional element connected between said second control terminal of said second ON-OFF switch and said common terminal of said first ON-OFF switch,

means for braking said motor comprising a braking element biased to braking condition and a solenoid connected in parallel with said motor for moving said braking element to released condition when said solenoid is energized,

said third and fourth unidirectional elements being directed and operable to short circuit said solenoid to prevent its being energized by reverse voltage generated by said motor when current from said current supply is switched off,

said first and second control reversing switches being operable separtely and independently of one another, and

means spring biasing said control reversing switches to positions in which said common terminals of both of said control reversing switches are connected with the same terminal of said supply conducters whereby no current is supplied to said motor.

4,362,976

DRIVING CIRCUIT FOR DC MOTOR

Yoshiki Fujioka, Hino; Yutaka Koiwai, and Mitsuhiko Hirota, both of Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Continuation of Ser. No. 97,382, Nov. 26, 1979. This application Dec. 1, 1980, Ser. No. 211,974

Claims priority, application Japan, Nov. 27, 1978, 53-146208

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—341 **13 Claims**

1. A DC motor drive circuit comprising

speed command means for generating a command speed signal;

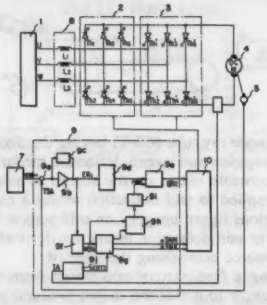
speed detection means for detecting the actual speed of a DC motor;

a thyristor-controlled full-wave reversible bridge including means, when in a power rectification mode, for converting an AC voltage from a power source to a DC voltage and for applying the DC voltage to the DC motor and, when in a power inversion mode, for feeding the DC motor armature current as AC power back to the power source; and

control means for controlling the firing angle of the thyristors of said bridge so that a speed deviation signal corresponding to the difference between the command speed signal and the detected actual DC motor speed is made to approach a predetermined difference, and for shifting the operating mode of said bridge from the power rectification mode to the power inversion mode when the command speed undergoes an abrupt decrease in absolute value, and then back to the power rectification mode from the power inversion mode so that the DC motor will rotate at said predetermined difference from the command speed, said control means further comprising:

polarity discrimination means for detecting a change in the polarity of the speed deviation signal after said bridge has switched to said power inversion mode after said abrupt decrease of the command speed;

firing angle narrowing means responsive to said detected change in polarity of the speed deviation signal for narrowing the firing angle of said thyristors down to a reduced angle when said bridge is operating in the power



inversion mode before changing back from the inversion mode to the rectification mode, said reduced firing angle being such as to ensure that the current through said motor is intermittently interrupted;

current intermittence detection means for detecting at least the first said interruption of the DC motor armature current after the operation of said firing angle narrowing means, and for generating a signal indicative thereof, the generation of said signal taking place after the occurrence of a predetermined condition after said detection of the first interruption of the DC motor armature current;

blocking means for blocking the firing of said thyristor bridge circuit for a prescribed period of time after the third of said three firing pulses has been generated; and

means for changing over the operating mode of said thyristor bridge from said inversion to said rectification mode after the occurrence of said predetermined condition.

4,362,977

METHOD AND APPARATUS FOR CALIBRATING A ROBOT TO COMPENSATE FOR INACCURACY OF THE ROBOT

Roger C. Evans, Yorktown Heights; John E. Griffith, Mahopac; David D. Grossman, Chappaqua; Myron M. Kutcher, Woodstock, all of N.Y., and Peter M. Will, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,391

Int. Cl.³ G05B *19/42*

U.S. Cl. 318—568 **1 Claim**

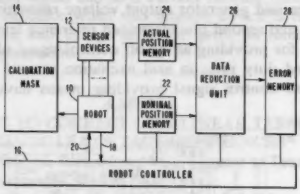
1. A method for calibrating a robot, comprising;

moving the end effectors of a robot in response to commands representative of a set of previously determined nominal positions known to the robot controller;

determining, by actual measurement, the associated actual positions reached by said robot end effector;

comparing said set of nominal positions with said associated

actual positions to determine the robot position errors associated with each of said nominal positions by said robot end effector being in physical contact with a stationary calibration mask having a plurality of datum points, edges and surfaces, and



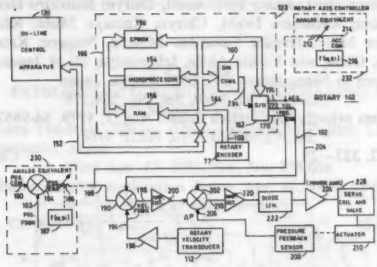
storing calibration data representing said robot position errors in an error memory for subsequent use by said robot controller in compensating for inaccuracy of said robot so it moves to the actual desired positions.

4,362,978

CONTROL SYSTEM FOR MANIPULATOR APPARATUS

Brian W. Pollard, Westport; William Perzley, Weston, and Stanley J. Blanchard, Danbury, all of Conn., assignors to Unimation, Inc., Danbury, Conn.

Filed Oct. 27, 1980, Ser. No. 201,181
Int. Cl.³ G05B *19/42*
U.S. Cl. 318—568 **20 Claims**



1. A control system for a manipulator having an arm movable in a plurality of axes and including control apparatus that provides position error, velocity and acceleration command signals in response to program data and arm position data, said manipulator arm performing a work cycle in accordance with said program data and said position error, velocity and acceleration command signals, said control system comprising:

means for inertia scaling one or more of said position error and acceleration command signals in accordance with scale factors representing the variation of the inertia of said arm over said work cycle;

means responsive to said inertia scaled command signals and said command signals not scaled for variations in inertia for generating axes control signals; and

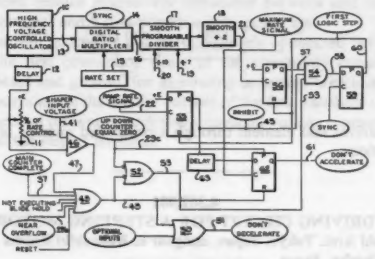
means responsive to said axes control signals for moving said arm in said plurality of axes.

4,362,979

STEPPING MOTOR CONTROL CIRCUIT

Lee E. Cannon, Bozeman, Mont., assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 872,276, Jan. 25, 1978, Pat. No. 4,234,830, which is a division of Ser. No. 731,867, Oct. 13, 1976, Pat. No. 4,126,821. This application Jul. 14, 1980, Ser. No. 168,916
Int. Cl.³ G05B *19/28*
U.S. Cl. 318—603 **2 Claims**



1. An electronic pulse counter for counting pulses up to an n digit number x of modulus m comprising:

(a) a modulus m down counter having a capacity of q digits where m is an integer with a minimum value of one, said down counter being of the type which counts down through zero to q digits of (m−1) including;

(i) means to input the q lowest order digits of x into the register(s) of said downcounter;

(ii) means to input the pulses to be counted into said downcounter;

(iii) means producing an output pulse from said downcounter each time it counts to zero;

(b) a computer including means to count n−q digits from a pulsed source;

(c) means to input the highest order n−q digits of X into the computer;

(d) means to input the output pulses from the downcounter into the computer;

(e) output means from said computer to indicate that the highest order n−q digits have been counted; and

(f) means responsive to the coincidence of said last mentioned output means and an output pulse from said downcounter to indicate that the count is complete.

4,362,980

POSITION ERROR RECOVERY AND MOTOR CONTROL SYSTEM

Herman Itzkowitz, Bala Cynwyd, Pa., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

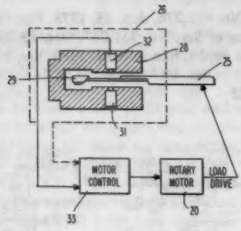
Filed Sep. 3, 1980, Ser. No. 183,964
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—685 **22 Claims**

1. A stepper motor system with improved tracking means, comprising:

a stepper motor and an element coupled to and driven by said stepper motor; sensor means for generating a plural state sensor signal representative of movement of said element through a plurality of positions, said signal normally being cyclical with said movement and changing a predetermined number of states at a time;

means continuously operable as said sensor signal goes through a plurality of cycles for determining when other than said predetermined number of states of said signal

change at a time, whereby the sensor signal is continuously detected to be legal or in error as said stepper motor



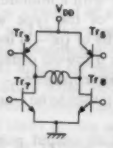
drives said element through a controlled number of positions.

4,362,981

DRIVING CIRCUIT FOR A STEPPING MOTOR

Satoshi Arai, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Sep. 12, 1980, Ser. No. 186,537
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **5 Claims**



1. A driving circuit for a stepping motor, comprising: first and second static induction transistors whose sources are connected together and each having a leak current characteristic between its drain and source selected so as to be approximately 10 μA; first and second PNP transistors each having an emitter connected to a source voltage; and a motor having one terminal connected to a junction point of the drain of said first static induction transistor and the collector of said first PNP transistor and another terminal connected to a junction point of the drain of said second static induction transistor and the collector of said second PNP transistor.

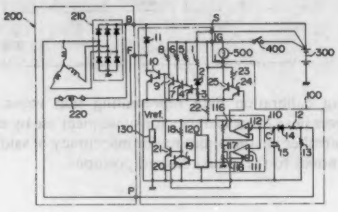
4,362,982

VOLTAGE REGULATOR FOR VEHICLES

Yoshio Akita, Ichinomiya; Toshinori Maruyama, Kariya, and Katsuya Muto, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 8, 1981, Ser. No. 281,494
Claims priority, application Japan, Jul. 11, 1980, 55/94628
Int. Cl.³ H02J *7/00*
U.S. Cl. 320—64 **4 Claims**

1. A battery charging system for vehicles comprising:
an A.C. generator;
a rectifier for rectifying the output of said A.C. generator;
a battery charged from the output of said rectifier; and
a voltage regulator for regulating the output of said A.C. generator;
said regulator including,
means for controlling the excitation of a field winding of said generator, said controlling means controlling a current flow to the field winding by detecting a voltage level of said battery, the current being supplied to said field winding from said battery and through an ignition switch at an initial excitation stage and the current being supplied from said generator through said rectifier at a full excitation stage succeeding to the initial excitation stage,
means for detecting an output voltage level of said generator, said detecting means having a single input terminal connected to an output terminal of a stator winding of said generator and producing first and second detection signals when said generator output voltage respectively reaches first and second predetermined reference levels,
means for providing an on-off control signal of a predetermined duty ratio to said excitation control means, said on-off control signal providing means having an input



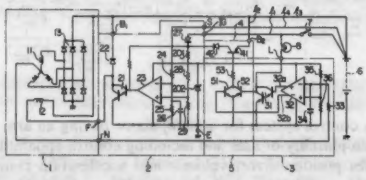
terminal to receive said first detection signal from said detecting means to continuously deliver said on-off control signal to said excitation control means until said first detection signal is received, thereby to supply the current to said field-winding intermittently at said predetermined duty ratio, and
means for indicating a generating state of said generator in response to said second detection signal from said detecting means, said indicating means indicating that said generator is not in a normal generating state until said second detection signal is received.

4,362,983

GENERATION CONTROL SYSTEM FOR VEHICLES

Kazumasa Mori, Aichi; Taro Asahi, Chiryu; Keiichiro Banzai, Toyota; Katsutaro Iwaki, Chiryu; Katsuya Muto, Kariya; Akira Mase, Handa; Takayasu Minura, Nagoya; Katsumi Itoh, Ohbu, and Yoshio Akita, Ichinomiya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 31, 1980, Ser. No. 174,178
Claims priority, application Japan, Aug. 1, 1979, 54-98527
Int. Cl.³ H02J *7/16*; H02P *9/00*
U.S. Cl. 322—28 **7 Claims**



1. A generation control apparatus for vehicles having a generator, a battery and an ignition switch, said apparatus comprising:
a voltage regulator circuit for controlling the generation of power by the generator;
a first circuit for supplying electric power from the battery to said voltage regulator circuit through the ignition switch;
a second circuit for supplying the electric power to said voltage regulator circuit without passing through said ignition switch;

means for producing a generation signal indicative of the generating condition of said generator;

a charge indicator connected to said battery through said ignition switch; and

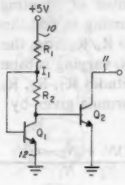
an energization control circuit for controlling the supply of said power through said second circuit in response to said generation signal and to a current flowing through said charge indicator when said ignition switch is turned on and when said charge indicator gives no indication of power generation.

4,362,984

CIRCUIT TO CORRECT NON-LINEAR TERMS IN BANDGAP VOLTAGE REFERENCES

Varnum S. Holland, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 16, 1981, Ser. No. 244,356
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—313 **7 Claims**



1. A circuit which compensates for non-linear temperature induced variation in a voltage reference comprising:

a. means for directing first and second current to flow through first and second circuit means, respectively;

b. means for maintaining said first and second currents at a substantially similar magnitude;

c. means for directing a component of said first current to flow through a third circuit means; and

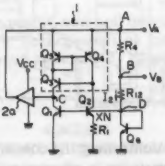
d. means for controlling said third circuit means including fourth circuit means operable to increase or decrease the value of said current component as a function of temperature.

4,362,985

INTEGRATED CIRCUIT FOR GENERATING A REFERENCE VOLTAGE

Chikara Tsuchiya, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 17, 1981, Ser. No. 255,038
Claims priority, application Japan, Apr. 18, 1980, 55-51399
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—314 **10 Claims**



1. A circuit for generating a reference voltage, comprising:

a first resistor operatively connected to ground;

a first transistor and a second transistor each having bases commonly connected together at a first connection point, each having collectors and each having emitter regions, an area of the emitter region of the first transistor being smaller than an area of the emitter region of the second transistor, the emitter of the first transistor being connected to ground, and the emitter of the second transistor being connected to the first resistor at a second connection point;

current supply means, operatively connected to the collectors of the first and second transistors, for supplying an equal current to the collectors of the first and second transistors;

a second resistor operatively connected between an output terminal and the first connection point of the commonly connected bases of the first and second transistors;

a third resistor operatively connected between said output terminal and a first power supply point; and

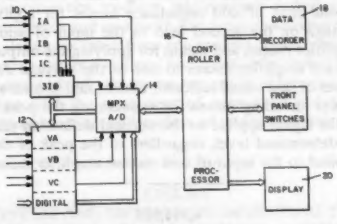
a current generator circuit, operatively connected between the first connection point of the commonly connected bases and ground, for generating a current which is proportional to the emitter current of the first transistor or the second transistor, such that a constant voltage is generated at the output terminal.

4,362,986

METHOD AND MEANS FOR MONITORING FAULTS IN AN ELECTRIC POWER SYSTEM AND THE LIKE

James J. Burke, Ballston Spa; Dale A. Douglass; Robert A. Lacy, both of Scotia; Richard J. Murphy, Clifton Park; Delano D. Wilson, Scotia, and Jonathan B. Wright, Schenectady, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 14, 1980, Ser. No. 196,760
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **10 Claims**



1. The method of monitoring an electric power system and recording faults for subsequent analysis comprising the steps of

(a) monitoring voltage and current at a selected point in said system,

(b) identifying voltage and current above preselected values,

(c) recording voltage and current values at a plurality of sampling rates for a predetermined period of time subsequent to voltage and current exceeding said preselected values,

(d) recording voltage and current values at a plurality of sampling rates for a predetermined period of time subsequent to the re-establishment of voltage and current after a fault interruption thereof, and

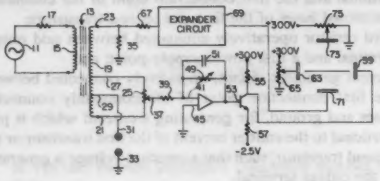
(e) recording voltage and current values at a plurality of sampling rates and for predetermined periods of times subsequent to current exceeding a zero level following a preselected period of zero level current.

4,362,987

APPARATUS FOR DETECTING ELECTRICAL SHORTS IN ELECTRONIC CIRCUITS

James R. Clinton, Seattle, Wash., assignor to Huntron Instruments, Inc., Lynnwood, Wash.

Filed Sep. 12, 1980, Ser. No. 186,493
Int. Cl.³ G01R 31/08
U.S. Cl. 324—52 11 Claims



1. An apparatus for detecting electrical shorts which is particularly useful with printed circuits, comprising:

impedance means having first and second leads extending therefrom;

first and second test lead means, one test lead means being connected to the first lead from said impedance means, the other test lead means being connected to ground;

resistance means connected between the second lead from said impedance means and ground;

means for inducing an AC signal into said impedance means, so that an AC signal is produced on the first lead, resulting in a current flow in the circuit comprising said first impedance means, said first and second test lead means, said resistance means and ground, when there is not an open circuit between said first and second test lead means;

a visual indicator means having vertical and horizontal deflection plates, such as an oscilloscope;

first amplifier means, including means connected to said impedance means for applying substantially the value of voltage on said first lead to the input of said first amplifier means, and means for applying the output of said first amplifier means to one horizontal deflection plate of said visual indicator means; and

second amplifier means, including means connected to the second lead of said impedance means for applying the voltage on the second lead to the input of said second amplifier means, and means for applying the output of said second amplifier means to one of the vertical deflection plates of said visual indicator means, said second amplifier means including means for maintaining the peak voltage of the signal applied to the vertical deflection plates at a predetermined level, regardless of the peak of the signal applied to the input of said second amplifier means.

4,362,988

METHOD OF AND CIRCUIT ARRANGEMENT FOR DETERMINING THE MAGNITUDE OF AN UNKNOWN RESISTANCE ELEMENT

Günther Weimer, Gerlingen, Fed. Rep. of Germany, assignor to Centra-Burkle GmbH & Co., Schonaich, Fed. Rep. of Germany

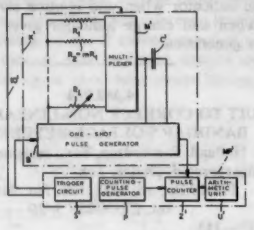
Filed Jun. 6, 1980, Ser. No. 157,067
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923026
Int. Cl.³ G01R 27/02
U.S. Cl. 324—62 4 Claims

1. A method of digitally determining the magnitude of R_i of an unknown resistance element, comprising the steps of:

establishing a recurrent gating period T with the aid of a first timing network;

establishing, with the aid of a second timing network, a train of counting pulses with a recurrence period t substantially shorter than said gating period T;

providing different ratios T/t in three different gating periods by respectively inserting a first known calibrating resistance of magnitude R_1, a second known calibrating resistance of magnitude $R_2=mR_1$ with $m>1$, and the unknown resistance element in circuit with an unvarying capacitance in said first timing network;



registering the number of counting pulses N_1, N_2 and N_i respectively occurring in said three gating periods; and

calculating the ratio R_i/R_1 from the counts N_1, N_2, N_i, said counts N_1, N_2, N_i varying substantially in direct proportion to the magnitudes R_1, R_2, R_i, and from the factor m according to a formula given by

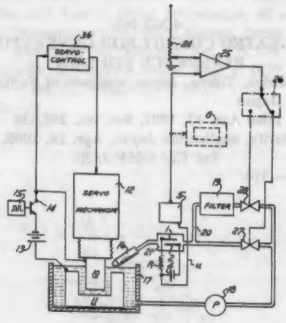
$$\frac{R_i}{R_1} = \frac{(m-1)N_i + N_2 - mN_1}{N_2 - N_1}$$

4,362,989

PROCESS AND APPARATUS FOR CONTROLLING THE CONCENTRATION OF SOLID PARTICLES IN SUSPENSION IN A LIQUID FLUID

Charles Frei, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Nov. 3, 1980, Ser. No. 203,719
Claims priority, application Switzerland, Nov. 16, 1979, 10237/79
Int. Cl.³ G01N 27/00
U.S. Cl. 324—71 CP 6 Claims



1. A process for controlling the concentration of electrically conductive solid particles in suspension in a liquid fluid, said process comprising flowing said liquid fluid between a pair of electrodes each having an active surface of predetermined area, maintaining said active surfaces at a constant distance from each other, connecting said electrodes across a D.C. power supply such as to cause relatively low energy electrical discharges to occur between said active surfaces, and determining the average delay time interval between applying a predetermined voltage between said electrodes and the occurrence of an electrical discharge, whereby the duration of said

average delay time interval is an inverse function of the concentration of said solid particles in said liquid fluid.

4,362,990

CURRENT- AND VOLTAGE-MEASUREMENT TRANSDUCER

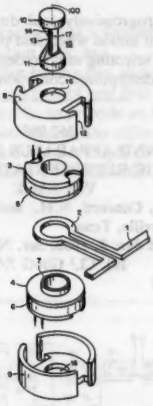
Gernot Schneider, Baar; Werner Trinkler, Zug; Mathis Halder; Eva Blazso, both of Baar; Jocob de Vries, Allenwinden; Konrad Schürmann, Cham, and Hans Muntwyler, Baar, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Apr. 7, 1980, Ser. No. 138,005

Claims priority, application Switzerland, Apr. 20, 1979, 3724/79

Int. Cl.³ G01R *1/20, 33/00;* H01F *1/00*

U.S. Cl. 324—117 R **16 Claims**



1. A transducer for measuring a current, comprising in combination:

magnetic core means having a gap normally impeding passage of any magnetic flux, including a shell,

coil means arranged to pass a premagnetizing current for producing a first magnetic field,

loop means arranged to pass the current to be measured so as to produce a second magnetic field, said shell surrounding said coil means and said loop means, and

magnetic field comparison means exposed to said magnetic fields, said magnetic field comparison means including magnetic film means bridging said flux gap and being alternately driveable in respective opposite directions of saturation substantially by said first magnetic field, and evaluating said measuring current in dependence of said magnetic fields,

said magnetic core means, said coil means, said loop means, and said magnetic field comparison means having a common axis, and being substantially disposed concentrically about said axis.

4,362,991

INTEGRATED CIRCUIT TEST PROBE ASSEMBLY

Joseph C. Carbine, Wyncote, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 12, 1980, Ser. No. 215,572

Int. Cl.³ G01R *1/06, 31/02*

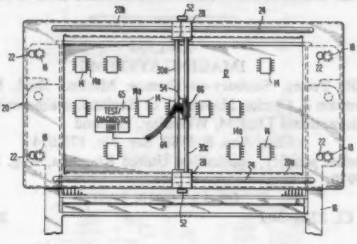
U.S. Cl. 324—158 P **9 Claims**

1. An integrated circuit test probe assembly for probing selected leads of operational integrated circuit packages mounted on an interconnection medium comprising in combination:

a probing frame removably mounted over said interconnection medium, said frame including a pair of opposed planar sides having respective bars elevated from the surfaces thereof and oriented parallel thereto,

a probe support slidably mounted in one rectangular coordinate axis on said bars of said probing frame and oriented in orthogonal relation thereto, said probe support comprising a pair of end blocks for engaging the respective pair of bars of said probing frame and a plurality of parallel spaced-apart rods, each of said rods having its opposite extremities supported by the respective pair of end blocks,

a test probe adapted to be carried by said rods of said probe support and being movable above said interconnection medium in the opposite rectangular coordinate axis, said test probe comprising a body and a cover therefor, said body including a plurality of spaced-apart tooth-like projections at its forward extremity, a plurality of spring-actuated plunger type contacts mounted in said body and protruding externally thereof between respective adjacent



ones of said tooth-like projections, a plurality of electrical conductors each having an extremity connected to one of said plurality of contacts and its opposite extremity external to said body, a spring member attached within said body, a plurality of slots in said body and said cover for permitting portions of said spring member to appear externally thereto,

said test probe being further adapted to be moved toward said selected leads of an integrated circuit package in a direction substantially orthogonal to the surface of said interconnection medium, said contacts engaging said selected leads and said tooth-like projections separating and insulating the latter from one another, said spring member causing said body of said test probe to be locked onto one of said rods of said probe support in substantial concurrence with the attainment of contact of said tooth-like projections with said surface of said interconnection medium.

4,362,992

SYSTEM AND METHOD OF DETECTING THE PROXIMITY OF AN ALTERNATING MAGNETIC FIELD

David G. Young, Bracknell, and Peter D. Finch, Woking, both of England, assignors to Sperry Limited, Bracknell, England

Filed Jan. 30, 1978, Ser. No. 876,302

Int. Cl.³ G01R *33/02*

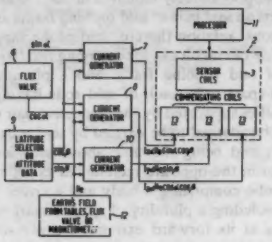
U.S. Cl. 324—247 **10 Claims**

1. A system for detecting the proximity of a source of an alternating magnetic field, said magnetic field having a horizontal component with a horizontal magnitude and a vertical component with a vertical magnitude comprising:

sensor means including first and second sensor coils, mounted in respective generally vertical non-parallel planes, each substantially responsive to said horizontal component of said alternating magnetic field for respectively producing first and second signals;

processing means coupled to receive said first and second signals for deriving a warning signal that is indicative of the proximity of said source and for determining the ratio of said second signal to said first signal, said ratio being

representative of the directional heading of said source with respect to said system; and



means for cancelling the earth's magnetic field in the region of said sensor means, whereby the sensitivity of said sensor means to said alternating magnetic field is enhanced.

4,362,993

IMAGING SYSTEMS

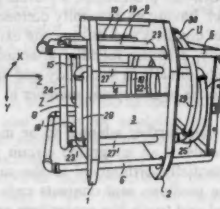
Ian R. Young, Sunbury-on-Thames; Michael Burl, Iver, and Graham J. Clarke, Hayes, all of England, assignors to Picker International Limited, Wembley, England

Filed Aug. 5, 1980, Ser. No. 175,674

Claims priority, application United Kingdom, Aug. 10, 1979, 7927970

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—309 **21 Claims**



1. For a nuclear magnetic resonance apparatus for imaging at least one planar section of the body of a patient, a combination of a transmitting coil arrangement, for transmitting radio frequency energy to excite nuclei in said body and a receiving coil arrangement, for receiving radio frequency signals emitted by nuclei excited to resonance, wherein the transmitting coil arrangement is of rectangular shape and the receiving coil arrangement is a saddle shaped coil having a plurality of conductors disposed perpendicularly to the plane of said section and distributed substantially uniformly about an ellipse parallel to said section and wherein the transmitting coil arrangement extends beyond the receiving coil arrangement in both directions perpendicular to the plane of said section.

4,362,994

SELF ALARMING FIVE SINGLE ELECTRODES CONDUCTIVITY CELL

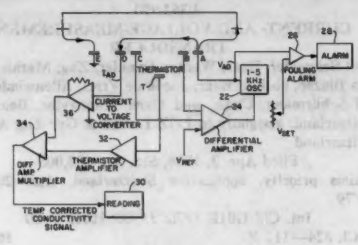
Herbert Goldsmith, Rockville, and Richard M. Stilwell, Germantown, both of Md., assignors to Chemed Corporation, Cincinnati, Ohio

Filed Jul. 14, 1980, Ser. No. 167,897

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—449 **10 Claims**

1. A method of operating alarm means to indicate a predetermined condition of fouling of the electrodes in a conductivity cell, said cell being of a type comprising a pair of voltage electrodes arranged within a pair of current electrodes, all of said electrodes being arranged seriatim in the direction of fluid flow through the cell, comprising the steps of utilizing the power provided in said current electrodes which increases as



said electrodes progressively foul during use of the cell to activate said alarm means when said power equals a predetermined value, and selecting said predetermined value to correspond to said predetermined condition of fouling.

4,362,995

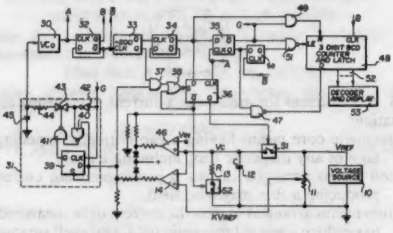
METHOD OF AND APPARATUS FOR PRODUCING A LOGARITHMIC REPRESENTATION OF AN INPUT VOLTAGE

Darryl C. Morris, Concord, N.H., assignor to Northern Telecom, Inc., Nashville, Tenn.

Filed Jan. 8, 1980, Ser. No. 110,475

Int. Cl.³ G06G *7/24*

U.S. Cl. 328—145 **10 Claims**



1. A method of producing a logarithmic representation of an input voltage, comprising the steps of:

exponentially changing the charge of a capacitor;

producing pulses at a pulse rate which is dependent upon the time taken for the charge of the capacitor to change exponentially with a given time constant between two reference voltages; and

producing a signal in dependence upon the number of said pulses which occur during the time taken for the charge of the capacitor to change exponentially with said given time constant between said input voltage and a reference voltage, said signal constituting said logarithmic representation.

4,362,996

METHOD AND MEANS FOR AN ACCURATE WIDEBAND PEAK DETECTOR

Durward H. Priebe, Paso Robles, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 10, 1980, Ser. No. 205,401

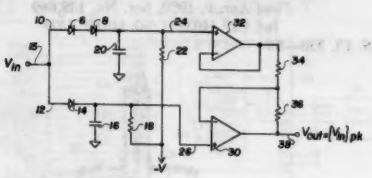
Int. Cl.³ G01R *19/04*

U.S. Cl. 328—151 **5 Claims**

1. An apparatus for providing the peak amplitude of a waveform applied thereto comprising:

(a) first detector means having an input port for receiving said waveform coupled thereto for detecting the peak amplitude of said waveform and for providing a first amplitude signal representing a first amplitude of said waveform at an output port;

(b) second detector means having an input port for receiving said waveform coupled thereto for detecting the peak amplitude of said waveform and for providing a second



amplitude signal representing a second amplitude of said waveform at an output port; and

(c) differential amplifier having first and second input ports coupled to the output port of said first and second detector means, respectively, to provide an output signal at an output port representative of the difference between said first amplitude signal and a multiple of said second amplitude signal to indicate a substantially peak amplitude of said waveform.

4,362,997

QUADRIPHASE DIFFERENTIAL DEMODULATOR

Hans van Driest, Bilthoven, Netherlands, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 18, 1980, Ser. No. 217,942

Int. Cl.³ H04L *27/22*

U.S. Cl. 329—50 **12 Claims**

1. In a differentially encoded phase-modulated data transmission system in which a carrier signal is phase-shifted over a data interval at a modulation rate to represent one of a plurality of pairs of data bits for transmission to a receiver, a demodulator apparatus for decoding the transmitted pairs of data bits comprising:

means for detecting the start of each data interval in the received carrier signal;

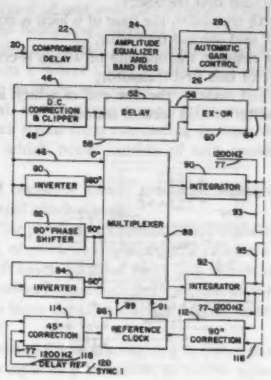
means for generating first clock pulses in response to the detecting of said data intervals;

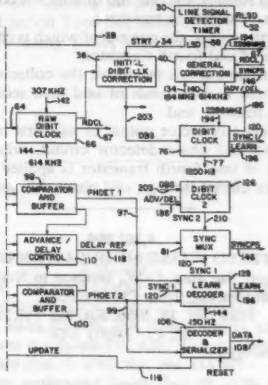
means for generating second clock pulses having the same phase as said first clock pulses in response to the generation of said first clock pulses;

means for decoding the carrier signal to derive first control signals representing a first predetermined pair of data bits in response to receiving said second clock pulses;

means coupled to said second clock pulse generating means for outputting to said second clock pulse generating means third clock pulses adjusted to the phase of the first clock pulses;

means operated in response to the generation of said first control signals for disabling the transmission of said third clock pulses to said second clock pulse generating means; and means coupled to said decoding means and said disabling means for counting the number of said first control signals generated by said decoding means, said counting means disabling the operation of said disabling means upon reaching a predetermined count whereby said third





clock pulses are transmitted to said second clock pulse generating means.

4,362,998

FM DETECTOR USING A PHASE SHIFT NETWORK AND AN ANALOG MULTIPLIER

Kazuo Watanabe, Kokubunji; Masanori Ienaka, Kodaira; Yasuo Kominami, Kokubunji, and Makoto Homma, Hamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 7,981

Claims priority, application Japan, Mar. 29, 1978, 53/35510; Mar. 29, 1978, 53/35512; Mar. 29, 1978, 53/35513

Int. Cl.³ H03D *3/14*

U.S. Cl. 329—103 **8 Claims**

3. In an FM detector comprising:

(1) a phase shift network for obtaining a phase shift signal whose phase is shifted from that of an FM intermediate frequency signal, and

(2) an analog multiplier for obtaining an FM detection signal by detecting a difference between the phases of said FM intermediate frequency signal and said phase shift signal, said analog multiplier including a differential amplifier circuit and a phase detector circuit, said differential amplifier circuit including first and second transistors, the emitters of which are connected in a differential form, and at least one of the bases of which is driven by said FM inter-

mediate frequency signal, at least said phase shift signal being applied to said phase detector circuit,

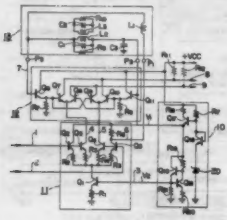
the improvement comprising:

(1) a third transistor, the base of which is connected to the base of said first transistor,

(2) a fourth transistor, the base of which is connected to the base of said second transistor,

(3) a first resistor, the one end of which is connected to the emitter of said first transistor,

(4) a second resistor, the one end of which is connected to the emitter of said second transistor,



(5) a third resistor, the one end of which is connected to the emitter of said third transistor,

(6) a fourth resistor, the one end of which is connected to the emitter of said fourth transistor,

(7) a constant-current transistor, the collector of which is connected to other ends of said first, second, third and fourth resistors, and

(8) wherein a collector output of said first transistor is applied to said phase detector circuit, while a collector output of said fourth transistor is applied to said phase detector circuit through said phase shift network.

4,362,999

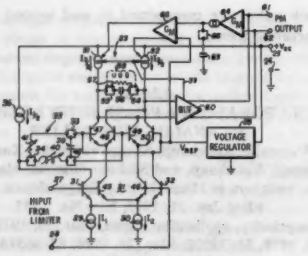
AM STEREO PHASE MODULATION DECODER

Don R. Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 15, 1980, Ser. No. 197,294

Int. Cl.³ H03D *3/06*

U.S. Cl. 329—103 **7 Claims**



1. A phase demodulator comprising:

a four quadrant multiplier having first and second input terminal pairs and an output terminal pair;

means for driving said first input pair from a source of phase modulated signal;

means for coupling said phase modulated signal in said multiplier to a tuned circuit resonating at the center frequency of said signal whereby said tuned circuit is caused to oscillate;

means for coupling said tuned circuit to said second input pair to induce a quadrature signal in said multiplier thereby to create a frequency sensitive response;

a capacitor coupled across said output terminal pair for integrating the signal at said output terminal pair thereby to produce a phase responsive output; and

first and second variable current sources connected as load elements to said output terminal pair of said multiplier.

4,363,000

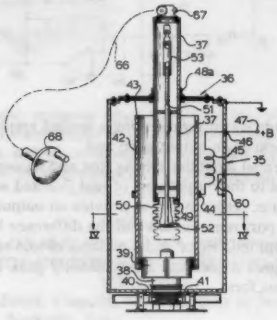
POWER AMPLIFIER TANK CIRCUIT

James A. Aurand, Quincy, Ill., assignor to Broadcast Electronics, Inc., Quincy, Ill.

Filed Apr. 9, 1980, Ser. No. 138,669

Int. Cl.³ H03F *3/60;* **H01P** *7/04*

U.S. Cl. 330—56 **4 Claims**



1. A resonant transmission line comprising:

outer and inner conductors,

a third conductor positioned generally axially within said inner conductor and electrically connected to said outer conductor,

said inner conductor having a power amplifier tube mounted in one end thereof in direct contact therewith and having an open opposite end through which said third conductor extends a distance into said inner conductor,

a conductive bellows disposed at an end of said third conductor which is inside said inner conductor,

drive means extending through said third conductor connected to said bellows for axially expanding and contracting said bellows for fine-tuning said transmission line,

drive controls located outside said inner conductor drivingly connected to said drive means for operating said drive means to fine-tune said cavity, the anode of said power amplifier tube being electrically connected directly to said inner conductor and,

a coarse adjustment means mechanically connecting said third conductor and said outer conductor for coarse-tuning of said transmission line, said coarse adjustment means permitting limited axial movement of said third conductor inside said inner conductor.

4,363,001

DIGITAL GAIN CONTROL APPARATUS

Tadao Suzuki, and Tadao Yoshida, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 23, 1980, Ser. No. 171,454

Claims priority, application Japan, Jul. 23, 1979, 54-93497

Int. Cl.³ H03G *9/14*

U.S. Cl. 330—107 **7 Claims**

1. A digital gain control apparatus comprising:

(a) a micro processor means for producing a plurality of serial-binary coded signals, a clock signal, and a strobe signal;

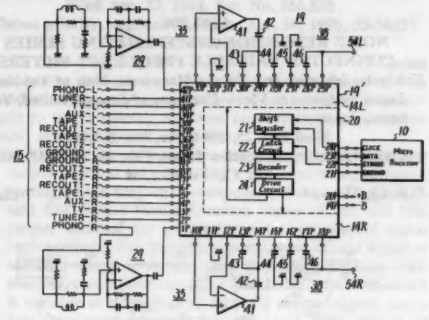
(b) a one chip integrated circuit divided into an analog signal processing section and a digital control section;

(c) said digital control section comprising:

a shift register supplied with the plurality of serial-binary

coded signals and the clock signal from the micro processor means,

latch circuit means connected to the output of said shift register and supplied with the strobe signal from said micro processor means to convert said plurality of serial-binary coded signals into a plurality of parallel-binary coded signals, and



decoder means connected to the output of said latch circuit means to produce a plurality of control signals from said plurality of parallel-binary coded signals; and

(d) said analog signal processing section comprising:

function selector means; and

volume adjusting means for a selected function, the selector means and volume adjusting means being connected to the output of said decoder means and controlled by said plurality of control signals.

4,363,002

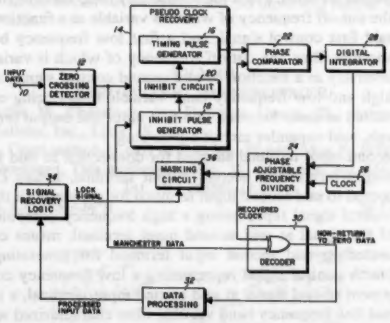
CLOCK RECOVERY APPARATUS FOR PHASE SHIFT KEYED ENCODED DATA

Robert M. Fuller, 28925 - 211th SE., Kent, Wash. 98031

Filed Nov. 13, 1980, Ser. No. 206,443

Int. Cl.³ H04L 27/22

U.S. Cl. 331—1 A **10 Claims**



1. Apparatus for recovering the clock signal, of predetermined period T, within a predetermined phase shift keyed encoded input data signal comprising:

pseudo clock signal means for producing a pseudo clock signal having a period T and having a transition corresponding to said input data signal;

phase lock means including:

oscillator means for producing a phase variable signal having said predetermined period T; and

phase comparator means for comparing the phase of said oscillator means produced signal with the phase of said pseudo clock signal and causing the phase of said oscillator means produced signal to tend to lock with said pseudo clock signal;

logic means for producing a lock signal responsive to said oscillator means produced signal being in phase lock with the clock signal of said encoded input data signal; and

masking means being responsive to a produced lock signal for producing a masking signal having a predetermined time duration t, where $t \leqq T/2$, with t/2 of said masking signal being on either side of the transitions of said pseudo clock signal, and masking circuitry for preventing said pseudo clock signal from responding to input data signal transitions which occur outside of said masking signal duration,

whereby said oscillator means produced signal comprises said recovered clock signal.

8. Apparatus for producing a pseudo clock signal recreating the clock signal, of predetermined period T, within a predetermined phase shift keyed encoded input data signal comprising:

timing pulse means for producing, synchronous to the occurrence of an input data transition, a timing pulse having a period T/2;

inhibit pulse means for producing, synchronous to the occurrence of an input data transition, an inhibit pulse having a predetermined period T_I, where $T/2 < T_I < T$; and

inhibit means for inhibiting the production of a timing pulse during said period T_I of said inhibit pulse,

whereby said timing pulses comprise said pseudo clock signal.

4,363,003

PHASE LOCKED LOOP FOR USE WITH DISCONTINUOUS INPUT SIGNALS

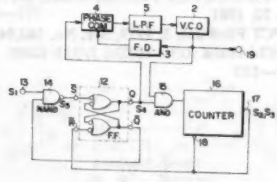
Hiroshi Osaka; Akira Honma, and Yoshio Kizaki, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,607

Claims priority, application Japan, Dec. 29, 1979, 54-173101

Int. Cl.³ H03L 7/08

U.S. Cl. 331—1 A **4 Claims**

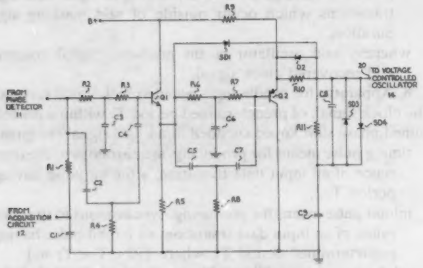


1. A PLL circuit which comprises a phase comparator circuit; a voltage-controlled oscillator circuit whose oscillation frequency is controlled by an output from said phase comparator circuit; a counter circuit for counting an oscillation ouptut from said voltage-controlled oscillator circuit; and a control means responsive to an input signal to provide the oscillation output of the voltage-controlled oscillator circuit to said counter circuit and to stop, by a count output from said counter circuit, the provision of said oscillation output, said phase comparator circuit being adapted to compare a phase of an output from said control means produced in response to said input signal with that of the oscillation output from said voltage-controlled oscillator circuit.

4,363,004
COMBINING AND FILTER CIRCUIT FOR A PHASE LOCKED LOOP

Arvid E. England, Jr., Lynchburg, and Gregory N. Mears, Forest, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Oct. 20, 1980, Ser. No. 198,831
Int. Cl.³ H03L 7/08
U.S. Cl. 331—8 14 Claims

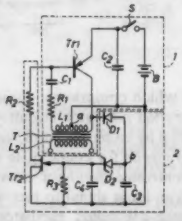


1. An improved combining and filter circuit for use in a phase locked loop comprising:
   a. a first input for phase detector signals;
   b. a second input for acquisition circuit signals;
   c. first means for connecting said first and second inputs together;
   d. an output for control signals;
   e. second means including a first pair of diodes for connecting said first means to said output;
   f. a resistor and a first capacitor connected in series across said output;
   g. a second capacitor connected in parallel with said resistor;
   h. and a second pair of diodes each connected in parallel with said resistor in reverse poled directions.

4,363,005
POWER CONSERVING BLOCKING OSCILLATOR POWER SUPPLY CIRCUIT

Toshihiko Kuroda, Tokyo, and Kazuo Sugiyama, Mitaka, both of Japan, assignors to Dentan Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP79/00176, § 371 Date Feb. 27, 1981, § 102(e) Date Feb. 27, 1981, PCT Pub. No. WO81/00178, PCT Pub. Date Jan. 22, 1981
PCT Filed Jul. 3, 1979, Ser. No. 243,941
Int. Cl.³ H03K 3/30; H02M 3/335; G05F 1/64
U.S. Cl. 331—112 2 Claims

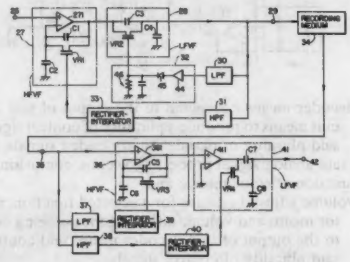


1. A power source voltage stabilizing circuit, characterized in that a base of an oscillatory transistor of a blocking-oscillatory circuit is connected through a resistor to a drain of a control transistor, a circuit is provided between a primary winding of a transformer of said blocking-oscillatory circuit and a gate of said control transistor for applying a voltage at a terminal of said primary winding of said transformer to said gate of said control transistor, said transformer has a secondary winding connectable to a discharge type sensing circuit, and a base current of said oscillatory transistor is controlled with said control transistor to change the period of oscillation of said blocking-oscillatory circuit.

4,363,006
NOISE REDUCTION SYSTEM HAVING SERIES CONNECTED VARIABLE FREQUENCY FILTERS

Yukinobu Ishigaki, and Yutaka Haramoto, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 25, 1981, Ser. No. 238,098
Claims priority, application Japan, Feb. 29, 1980, 55-24676
Int. Cl.³ H04B 1/64
U.S. Cl. 333—14 7 Claims



1. A noise reduction system having a compressor circuit and an expander circuit, said compressor circuit comprising:
   first input and output terminals, means connected to the first output terminal for generating a first control signal representing a high frequency component of a signal at said first output terminal, means connected to said first output terminal for generating a second control signal representing a low frequency component of said signal at said first output terminal, a first high frequency band variable filter, the cut-off frequency of which is variable as a function of said first control signal, and a first low frequency band variable filter, the cut-off frequency of which is variable inversely as a function of said second control signal, said high and low frequency band variable filters being connected in series between said first input and output terminals, said expander circuit comprising:
   a second input terminal adapted for connection to said first output terminal, a second output terminal, means connected to said second input terminal for generating a third control signal representing a high frequency component of the signal at said second input terminal, means connected to said second input terminal for generating a fourth control signal representing a low frequency component of said signal at said second input terminal, a second low frequency band variable filter characterized with a complementary frequency response to the frequency response characteristic of said first high frequency band variable filter, and a second high frequency band variable filter characterized with a complementary frequency response to the frequency response characteristic of said first low frequency band variable filter, said second variable filters being connected in series between said second input and output terminals, the cut-off frequency of said second low frequency band variable filter being variable as a function of said third control signal and the cut-off frequency of said second high frequency variable filter being variable inversely as a function of said fourth control signal.

4,363,007

NOISE REDUCTION SYSTEM HAVING SERIES CONNECTED LOW AND HIGH FREQUENCY EMPHASIS AND DE-EMPHASIS FILTERS

Yutaka Haramoto; Yukinobu Ishigaki; Kaoru Totsuka, and Takao Kawasaki, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 23, 1981, Ser. No. 256,825
Claims priority, application Japan, Apr. 24, 1980, 55-54657
Int. Cl.³ H04B 1/64
U.S. Cl. 333—14 7 Claims

1. A noise reduction system having a compressor and an expander having a complementary frequency response characteristic to the frequency response characteristic of the compressor, said compressor comprising:

first input and output terminals, means connected to the first output terminal for generating a first control signal representing a high frequency component of a signal applied to said first output terminal, means connected to said first output terminal for generating a second control signal representing a low frequency component of said signal at said first output terminal, a high frequency emphasis variable frequency filter circuit of which the cutoff frequency is variable as a function of said first control signal, and a low frequency emphasis variable gain filter circuit of which the amount of emphasis is variable inversely as a function of said second control signal, said filter circuits being connected in a series circuit between said first input and output terminals, and

said expander comprising;

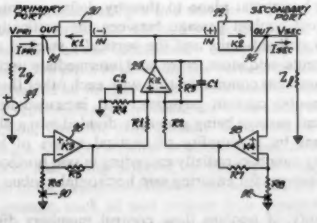
a second input terminal adapted for connection to said first output terminal, a second output terminal, means connected to said second input terminal for generating a third control signal representing a high frequency component of the signal at said second input terminal, means connected to said second input terminal for generating a fourth control signal representing a low frequency component of said signal at said second input terminal, a low frequency de-emphasis variable gain filter circuit of which the amount of de-emphasis is variable inversely as a function of said fourth control signal, and a high frequency de-emphasis variable frequency filter circuit of which the cutoff frequency is variable as a function of said third control signal, said filter circuits being connected in a series circuit between said second input and output terminals.

4,363,008

ELECTRONIC TRANSFORMER

Charles W. Chambers, Jr., Downers Grove, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Continuation-in-part of Ser. No. 37,446, May 9, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,202
Int. Cl.³ H03H 11/02
U.S. Cl. 333—24 R 20 Claims



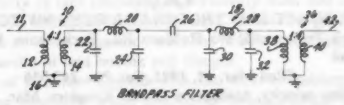
1. A bilateral electronic transformer having a primary port for connection with a signal generator having an impedance and a secondary port for connection with a load impedance, comprising first and second out of phase sinking and sourcing current sources, each for receiving a control signal at an input thereto and for generating at an output therefrom a current flow having a magnitude in accordance with the value of said control signal, said current flows being opposite in phase and said first current source output being coupled with said primary port and said second current source output being coupled with said secondary port; and circuit means coupled with said primary and secondary ports for comparing the voltages thereat, said circuit means having an output coupled with said current source inputs and generating said control signal at said output, said control signal having a value in accordance with the difference in values of the primary and secondary port voltages times a constant, wherein the difference in value between the primary and secondary port voltages is inversely proportional to the value of the load impedance times the same constant, whereby signals at said primary port are sunk by said first current source and sourced by said second current source and signals at said secondary port are sunk by said second current source and sourced by said first current source, wherein said control signal is a voltage signal, said first and second current sources are first second out of phase voltage to current converters, one of said voltage to current converters is an inverting voltage to current converter and the other is a noninverting voltage to current converter, and said circuit means includes an operational amplifier (op amp) having an output coupled with said voltage to current converter inputs, an inverting input coupled with one of said primary and secondary ports and a noninverting input coupled with the other of said ports, and including a first voltage amplifier circuit connected at an input thereto with said primary port and at an output therefrom with one of said op amp inputs, and a second voltage amplifier circuit connected at an input thereto with said secondary port and at an output therefrom with the other op amp input, said constant having a value determined by the gains of said op amp and said first and second voltage amplifier circuits.

4,363,009

L-C FILTER WITH IMPEDANCE TRANSFORMERS

Bruce G. Malcolm, and Robert E. Binninger, both of Indianapolis, Ind., assignors to Wavetek Indiana, Inc., Beech Grove, Ind.

Filed May 8, 1980, Ser. No. 147,562
Int. Cl.³ H03H 7/075, 7/09, 7/38
U.S. Cl. 333—177 16 Claims



12. In combination for use in a particular frequency range between 3 megahertz and 300 megahertz,

means providing an input signal at a particular impedance in the particular frequency range,

first means providing a transformation in the particular frequency range of the impedance from the particular impedance to a second impedance lower than the particular impedance,

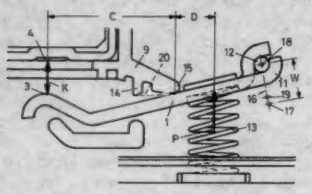
a filter connected to the first means and operative at the second impedance in the particular frequency range, and

second means connected to the filter and providing a transformation of the impedance from the second impedance to the particular impedance in the particular frequency range.

4,363,010
CONTACT DEVICE FOR A SWITCH

Herbert Wirth, Gisikon, Switzerland, assignor to Weber AG Fabrik Elektrotechnischer Artikel und Apparate, Emmenbrücke, Switzerland

Filed May 12, 1981, Ser. No. 263,012
Claims priority, application Switzerland, May 28, 1980, 4147/80
Int. Cl.³ H01H 75/00, 77/00, 83/00
U.S. Cl. 335—6 3 Claims



1. A contact device in a switch, in particular in a circuit breaker, having

a movable contact lever under spring pressure, which on one end includes a contact point for an associated fixed contact element and on its other end is pivotally supported on pin means of a tripping system which when tripped displaces said pin means in a direction transverse to the longitudinal direction of said contact lever,

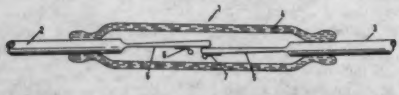
a stop for the contact lever being disposed between the two ends in order to pivot the contact lever about the stop upon a displacement of said pin means and thereby to disengage its contact point from the fixed contact element, said stop having at least two contact locations for the contact lever, which locations are spaced apart from the contact lever and from its supported end by different amounts, in such manner that the contact lever, beginning at its position in which its contact point rests on the fixed contact element, upon displacement of its supported end first comes into contact with the contact location, which is the most remote from the supported end and then, before the termination of the displacement, comes into contact with the contact location of the stop, which is located closest to the supported end, and

a compression spring supported on a housing element and acting upon the contact lever at a point located between the end of the contact lever supported on said pin means and the contact location of the stop located closest to said end.

4,363,011
CONTACT ELECTRODES FOR REED SWITCHES

Henryk Turczanski, 17a Reddons Rd., Beckenham, Kent, England

Filed Mar. 11, 1981, Ser. No. 242,536
Claims priority, application United Kingdom, Mar. 17, 1980, 8008912
Int. Cl.³ H01H 51/00, 1/66
U.S. Cl. 335—154 2 Claims

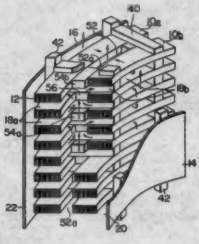


1. A reed switch comprising a hermetically sealed enclosure, and a pair of electrodes extending within the enclosure, each electrode having mutually orthogonal dimensions of length, width and thickness and being flattened over a part of its length to provide respective flexible cantilevered electrode blade portions having free ends, the free ends having an overlap region within said enclosure extending in the length and width dimensions to form a magnetically actuable contact of said switch, characterised in that the blade portion of each electrode is tapered in the thickness dimension so that the thickness of the blade portion increases uniformly towards the free end.

4,363,012
WINDING STRUCTURE FOR STATIC ELECTRICAL INDUCTION APPARATUS

Takahiro Daikoku, Ushikumachi; Masahiro Ikegawa, Shimoinayoshi; Wataru Nakayama, Kashiwa, and Taisei Uede, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 888,996, Mar. 22, 1978, Pat. No. 4,245,206. This application Sep. 29, 1980, Ser. No. 192,328
Claims priority, application Japan, Mar. 26, 1977, 52-33454; Mar. 26, 1977, 52-33455; Feb. 6, 1978, 53-11455; Feb. 6, 1978, 53-11457; Feb. 6, 1978, 53-11458
Int. Cl.³ H01F 27/08
U.S. Cl. 336—60 13 Claims



1. A static electrical induction apparatus comprising:

a container having an axis extending in the vertical direction;

a pair of inner and outer insulation continuous walls disposed in said container so as to commonly include said vertical axis thereby defining a predetermined space therebetween;

a winding assembly disposed in said space in a manner so that an inner vertical coolant passage is formed between said winding assembly and said inner insulation continuous wall, said winding assembly being composed of a plurality of coil units stacked on one another in the vertical direction with separation at predetermined intervals so as to form horizontal coolant passages between vertically adjacent ones of said coil units, each of said coil units being divided into at least two, inner and outer, coil sub-units disposed concentrically with each other in a common horizontal plane to thereby define an intermediate vertical coolant passage between the vertically stacked inner coil sub-units and the vertically stacked outer coil sub-units, said inner, outer, and intermediate vertical coolant passages communicating with each other through said horizontal coolant passages, said intermediate vertical coolant passage being generally divided into a plurality of regions by a plurality of vertical arrays of horizontal spacer members radially extending in said horizontal coolant passages for ensuring said horizontal coolant passages; and

a plurality of coolant flow control members disposed in circumferentially and axially discrete relation from one another in said intermediate vertical coolant passage in a manner so that a horizontal sectional area of each of the regions of said intermediate vertical coolant passages is decreased, but not substantially completely closed, periodically at a pitch of nP along the vertical direction,

where n represents an integer which is not smaller than two (2) and P represents a pitch of said coil units along the vertical direction, each of said coolant flow control members having a width in the radial direction being selected to closely correspond to a width in the radial direction of said intermediate vertical coolant passage.

4,363,013
WINDING STRUCTURE FOR STATIC ELECTRICAL INDUCTION APPARATUS

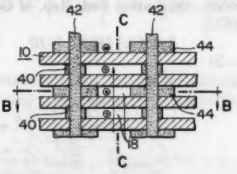
Takahiro Daikoku, Ushikumachi; Masahiro Ikegawa, Shimoinayoshi; Wataru Nakayama, Kashiwa, and Taisei Uede, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 888,996, Mar. 22, 1978, Pat. No. 4,245,206. This application Sep. 29, 1980, Ser. No. 192,329

Claims priority, application Japan, Mar. 26, 1977, 53/33454; Mar. 26, 1977, 53/33455; Feb. 6, 1978, 54/11455; Feb. 6, 1978, 54/11457; Feb. 6, 1978, 54/11458

Int. Cl.³ H01F *27/08*

U.S. Cl. 336—60 **3 Claims**



1. A static electrical induction apparatus comprising:

a container having an axis extending in the vertical direction;

a pair of inner and outer insulation continuous walls disposed in said container so as to commonly include said vertical axis thereby defining a predetermined space therebetween;

a winding assembly disposed in said space in a manner so that an inner vertical coolant passage is formed between said winding assembly and said inner insulation continuous wall and an outer vertical coolant passage is formed between said windings assembly and said outer insulation continuous wall, said winding assembly being composed of a plurality of coil units stacked on one another in the vertical direction with separation at predetermined intervals so as to form a plurality of horizontal coolant passages between vertically adjacent ones of said coil units, said inner and outer vertical coolant passages communicating with each other through said horizontal coolant passages; and

a plurality of coolant flow control members disposed in circumferentially and axially discrete relation from one another in at least selected one of said inner and outer vertical coolant passages in a manner so that a horizontal sectional area of said selected vertical coolant passage is decreased, but not substantially completely closed, periodically at a pitch of nP along the vertical direction where n represents an integer which is not smaller than two (2) and P represents a pitch of said coil units along the vertical direction, each of said coolant flow control members having a width in a radial direction perpendicular to said vertical axis being selected to closely correspond to a width in the radial direction of said selected vertical coolant passage, each of said coolant flow control members having a height in the vertical direction being selected to closely correspond to a height in the vertical direction of each of said horizontal coolant passages, said coolant flow control members being disposed in said selected vertical coolant passage at predetermined portions that are opposite the selected ones of said horizontal coolant passages.

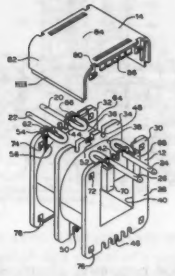
4,363,014
SNAP-ON COVER FOR BOBBIN-WOUND COIL ASSEMBLY

Charles W. Leach, Jefferson County; Jerry W. McElroy, St. Louis County, both of Mo., and Donald E. Donnelly, Edwardsville, Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 6, 1981, Ser. No. 261,139

Int. Cl.³ H01F *27/02*

U.S. Cl. 336—90 **1 Claim**



1. In a bobbin-wound electrical coil assembly having a plurality of lead-exit slots in one or both of the bobbin end flanges, some of the slots containing insulated electrical leads and others of the slots being unused, the slots being narrower than the diameter of the insulated leads so that the insulation on the leads is compressed as the leads are inserted into those slots being used so as to enable the leads to resist a pulling force applied thereto, an improved cover therefor comprising:

a relatively rigid U-shaped member comprising a central portion and side walls integral with said central portion and extending downwardly therefrom;

a plurality of flexible legs extending downwardly from said central portion and cooperative with leg-retaining openings in the bobbin end flanges for providing snap-on engagement between the cover and said bobbin end flanges, said legs being adapted to be deflected inwardly by said bobbin end flanges prior to said engagement;

a plurality of tabs extending downwardly from said central portion and spaced inwardly from an outer edge thereof so as to be in alignment with the bobbin end flange slots inwardly of said bobbin end flanges;

those of said tabs aligned with the slots containing leads being displaced when said cover is snapped on to said bobbin end flanges, said cover being effective to retain said leads in said slots containing leads;

those of said tabs aligned with the unused slots being undisplaced and effective to cover said unused slots;

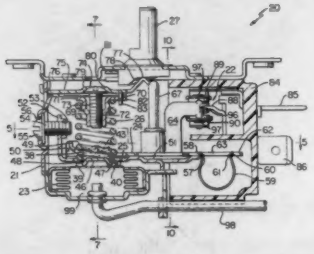
each of said side walls including guide rails cooperative with said bobbin end flanges for initially aligning said cover with said bobbin end flanges and for subsequently applying an outward force to portions thereof; and

said outward force being effective, prior to said engagement, for minimizing the amount of said inward deflection of said flexible legs and, after engagement, for preventing said cover from being easily removed in the event of a minimum amount of engagement of said flexible legs in said leg-retaining openings.

4,363,015
CONDITION RESPONSIVE ELECTRICAL SWITCH CONSTRUCTION AND PARTS AND METHODS THEREFOR

Charles D. Branson, Greensburg, and Harvey J. Shopsky, Latrobe, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 865,594, Dec. 29, 1977, Pat. No. 4,194,102. This application Oct. 10, 1979, Ser. No. 83,559
Int. Cl.³ H01H 21/64
U.S. Cl. 337—117 40 Claims

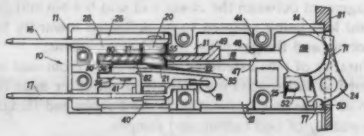


1. In a condition responsive electrical switch construction having frame means carrying an electrical switch and a condition responsive device having a movable wall for causing movement of a lever that is pivotally carried by said frame means and is operatively associated with said switch to operate the same as said lever is moved by said wall to a certain position in opposition to the force of a range spring carried by said frame means, the improvement comprising a cradle-like member having a base operatively associated with said range spring so as to be held thereby against said wall to be moved in unison with said wall and having arm means engaging said lever to cause said lever to move in relation to movement of said wall.

4,363,016
CIRCUIT BREAKER

Robert P. Unger, Evansville, Ind., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jun. 3, 1981, Ser. No. 270,186
Int. Cl.³ H01H 71/58
U.S. Cl. 337—56 14 Claims

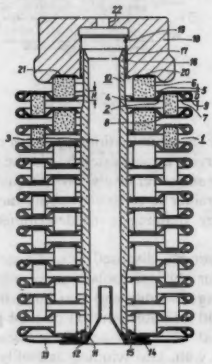


1. A circuit breaker comprising:
a housing;
a first and a second terminal;
a stationary contact disposed within the housing being connected to said first terminal;
a movable contact disposed within said housing and connected to said second terminal;
said movable contact being moved on predetermined conditions toward and away from said stationary contact to make and break contact therewith;
an insulator slide member slidingly guided in the housing between a first and a second position and having an opening through which the movable contact being extendable to make contact with the stationary contact with said slide member being disposed in said first position, and an insulator portion interposable between said contacts and a tripped indicator portion exposable without said housing with said slide member being disposed to said second position;
said slide member also being provided with standoff means for keeping operative contact surface of said movable contact from contacting the insulator portion when slide member is in said second position;
actuator means rotatably mounted respective to said housing and engaging the slide member for translating a rotational motion of the actuator means into a linear motion displacement of the slide member; and
biasing means for urging the slide member to the second longitudinal position.

4,363,017
RESISTOR DEVICE PARTICULARLY FOR HIGH-VOLTAGE INSTALLATIONS

Manfred Weniger, and Manfred Just, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,305
Claims priority, application Fed. Rep. of Germany, May 30, 1980, 8014833[U]
Int. Cl.³ H01C 7/10
U.S. Cl. 338—21 10 Claims



1. A resistor device comprising a plurality of annular resistance elements of which an inner annular resistance element is interleaved between two outer annular resistance elements of larger diameter than that of the inner resistance element, annular-shaped contact elements having a central cutout interposed between adjacent resistance elements for electrically connecting adjacent resistance elements, each contact element having an annular recess of larger diameter on one side thereof for receiving the outer resistance element and another annular recess of smaller diameter for receiving the inner resistance element, a clamping sleeve of insulating material disposed in the central cutouts of the contact elements, and means cooperating with opposed ends of the clamping sleeve for clamping the stack together.

4,363,018
ELECTRONIC COMPONENTS OF ROTARY TYPE

Hiroshi Matsui, and Masayoshi Kakumu, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 3, 1980, Ser. No. 203,550
Int. Cl.³ H01C 10/36
U.S. Cl. 338—172 22 Claims

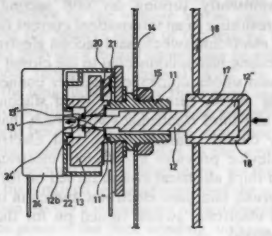
1. An electronic component for electrical equipment comprising:
a bearing sheath having a front and rear end and an axially

extending bore therein, said sheath being fixed on a frame of the electrical equipment,

an operational shaft having portions extending internally and externally of said electrical equipment, said operational shaft being pivotally disposed in said bearing sheath,

a substrate fixed to the rear end of said bearing sheath having means defining a resistor layer thereon,

a brush holder mounted on the internal portion of said operational shaft so as to be rotated by rotation of said operational shaft, and



at least one contact mounted on said brush holder for operatively contacting said resistor layer means formed on said substrate,

wherein

a central portion of said operational shaft is disposed in said bearing sheath and has an outer diameter smaller than the diameter of the bore in said bearing sheath, and

said operational shaft is pivotally held near said internal portion so that the external portion of said operational shaft has degrees of freedom in all tilting directions.

4,363,019

IGNITION CABLES

Yoshimi Miyamoto, Aichi; Keiichi Kojima, and Yasuo Toriumi, both of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Osaka and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Feb. 2, 1981, Ser. No. 230,928
Claims priority, application Japan, Jan. 31, 1980, 55/11441
Int. Cl.³ H01C *3/06*
U.S. Cl. 338—214 **4 Claims**

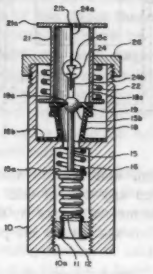
1. A high voltage ignition cable having a low capacitance comprising a resistive-conductor core, an insulator layer, and a jacket, wherein the resistive-conductor core comprises a tension member prepared by intertwining a plurality of polyaramide fiber bundles around a central polyaramide fiber bundle, wherein said tension member is impregnated with a semiconductive paint.

4,363,020

INTERROGATING SYSTEM FOR REMOTELY MONITORING TIRE AIR PRESSURE

Harry J. Venema, Wheaton, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 22, 1980, Ser. No. 219,299
Int. Cl.³ B60C *23/02*; G01S *9/58*
U.S. Cl. 340—58 **6 Claims**



1. An interrogating system for remotely monitoring the air pressure in a tire mounted on a wheel of a vehicle, comprising:

a passive transponder attached to the wheel and including a semiconductor diode having anode and cathode elements; a relatively rigid, self-supporting metallic conductor directly connected to and extending from one of the diode's elements to provide an antenna for the diode; sensing means for sensing the air pressure within the tire; a movable electromagnetic shield for the antenna; and means controlled by said sensing means for positioning said shield, with respect to the antenna and in response to the sensed tire air pressure, so that the shield surrounds the antenna when the tire air pressure is within a predetermined desired normal range thereby shielding the antenna from radiation, and so that the antenna extends out of the shield and is exposed to radiation when the sensed tire air pressure is either above or below the desired normal range;

transmitting means in the vehicle for transmitting electromagnetic radiation to said passive transponder to effectively interrogate said transponder, said diode responding to the received radiation, when said antenna is exposed, and generating a response signal which is retransmitted from said antenna;

and receiving means in the vehicle for receiving said response signal and for producing therefrom an output for controlling an indicator to provide an indication to the driver of the vehicle that the tire air pressure is outside of the desired normal range.

4,363,021

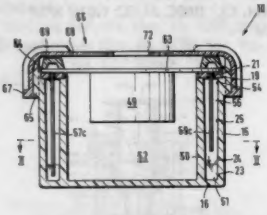
SWITCHING DEVICE FOR MOTOR VEHICLE ANTI-THEFT SYSTEM

Vladimir Koubecky, Cologne, Fed. Rep. of Germany, assignor to Felten & Guilleaume GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 8, 1980, Ser. No. 195,338
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942252; Apr. 30, 1980, 3016593
Int. Cl.³ B60R *25/10*
U.S. Cl. 340—65 **24 Claims**

1. In a switching device to be used in an anti-theft system for a motor vehicle of the type having an electrically-powered alarm operated by said switching device, the improvement wherein said switching device comprises a housing defining a chamber with a floor and containing a partial filling of an electrically-conductive fluid, three or more electrical contacts in the form of elongated immersible sensors extending down-

wardly into said chamber to differing extents with at least one of said sensors being of a fixed extent longer than the others thereof and terminating adjacent to said floor of said housing and being immersed in said fluid filling when the vehicle is in



a given set position, said sensors automatically closing an electrical path when any one of said sensors is electrically connected to said immersed sensor by the said fluid when the vehicle is tilted from said given set position to a detecting position.

4,363,022

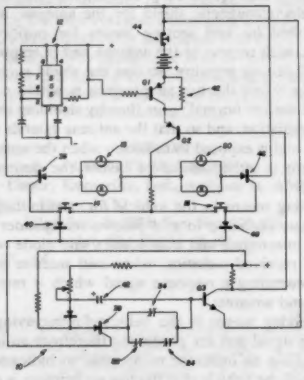
SELF CANCELLING MOTORCYCLE TURN SIGNAL WHICH RECOGNIZES BALANCE

Lawrence F. Manacci, 1013 W. 30th St., Lorain, Ohio 44055

Filed Mar. 30, 1981, Ser. No. 249,099

Int. Cl.³ B60Q *1/34*

U.S. Cl. 340—73 **2 Claims**



1. A directional signaling system for motorcycles including;

first and second normally open push button switches;

a first silicon controlled rectifier connected to said first normally open push button switch;

a second silicon controlled rectifier connected to said second normally open push button switch;

first indicating means connected to said first silicon controlled rectifier;

second indicating means connected to said second silicon controlled rectifier;

said first and second indicating means connected to a first electronic switch;

said first electronic switch connected to a second electronic switch;

said second electronic switch connected to a power supply;

a third silicon controlled rectifier connected to said first and second normally open push button switches;

said third silicon controlled rectifier connected to a third electronic switch, via a plurality of normally closed contacts;

said third electronic switch connected to said first electronic switch;

said first normally closed push button switch, when closed, providing an electrical signal to said first and third silicon controlled rectifiers which turn on said first and third electrical switches;

said second normally closed push button switch, when closed, providing an electrical signal to said second and third silicon rectifiers which turns on said first and third electrical switches; and

a timing control means for providing a timed output signal for intermittently turning on said second electronic switch, resulting in an intermittent current flow through said first electronic switch, said second electronic switch, said indicating means connected to the closed push button switch, said silicon controlled rectifier connected to said indicating means, through said third silicon controlled rectifier and third electronic switch such that when said normally closed contacts open, said electrical energy storing device provides a sufficient electrical signal to keep said third electrical switch turned on for a predetermined period, said third electronic switch in turn keeping said first electronic switch turned on for that predetermined interval.

4,363,023

ELECTROMAGNETIC DEVICE FOR MEASURING THE SPEED OF HANDWRITING

Louis Bechet, Douvaine, France, assignor to Battelle Memorial Institute, Carouge, Switzerland

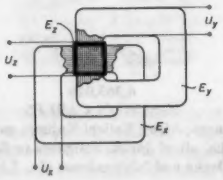
PCT No. PCT/CH78/00048, § 371 Date Aug. 9, 1979, § 102(e) Date Aug. 6, 1979, PCT Pub. No. WO79/00363, PCT Pub. Date Jun. 28, 1979

PCT Filed Dec. 11, 1978, Ser. No. 130,165

Claims priority, application Switzerland, Dec. 9, 1977, 15018/77

Int. Cl.³ G06K *9/00*; G08C *21/00*; G01R *33/00*

U.S. Cl. 340—146.3 SY **1 Claim**



1. Apparatus for measuring the relative speed of handwriting in a predetermined writing area on a writing support surface, comprising:

a writing instrument having therein a longitudinal axis, a writing tip at one end thereof, and means for providing a magnetic flux directed substantially parallel and adjacent to the axis;

a first electrically conductive winding comprising a plurality of turns below the writing support surface having a selected portion in which the conductors are substantially in a plane adjacent and parallel to the writing area, extend in substantially straight lines across the writing area in a first direction, and are substantially evenly distributed across the writing area in a second direction that is substantially perpendicular to the first direction, with the rest of the winding extending away from the vicinity of the writing area;

a second electrically conductive winding comprising a plurality of turns below the writing support surface having a selected portion in which the conductors are substantially in a plane adjacent and parallel to the writing area, extend in substantially straight lines across the writing area in the

second direction, and are substantially evenly distributed across the writing area in the first direction, with the rest of the winding extending away from the vicinity of the writing area;

the selected portions of first and second windings thus forming a substantially rectangular grid adjacent and parallel to the writing area and substantially coextensive therewith;

so that, when the writing tip is moved in the proximity of the writing area, voltages are induced in the windings by the variations in magnetic flux across the selected portions of the windings responsive to the speed of the movement;

means responsive to the voltage across each winding for indicating the relative speed of the writing tip, the magnetic flux providing means comprising an annular magnet positioned substantially coaxial with the writing tip around the longitudinal axis of the writing instrument; and

a third electrically conductive winding comprising a plurality of turns below the writing support surface substantially in a plane adjacent and parallel to the writing area and extending around the writing area; so that, when the writing tip is moved in the proximity of the writing area in a direction having a component of movement perpendicular to the plane of the third winding, voltage is induced in the third winding by the variation in magnetic flux across it responsive to the speed of the movement component perpendicular to the plane of the writing area; and means for connecting the voltage across the third winding to the voltage responsive means, in opposition to the voltage across the first winding, and in opposition to the voltage across the second winding.

4,363,024

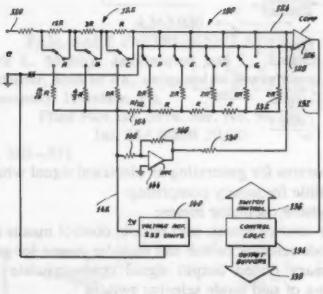
DIGITAL-TO-ANALOG CONVERTER PROVIDING MULTIPLICATIVE AND LINEAR FUNCTIONS

Adrian P. Brokaw, 81 Macon Rd., Burlington, Mass. 01803

Filed Nov. 21, 1977, Ser. No. 853,211

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **11 Claims**



1. A digital-to-analog converter for converting a digital number comprising a first set of step bits and a second set of segment bits to a corresponding analog signal, said converter including:

a current source or sink comprising a resistor ladder network having an input and an output, said network including a plurality of stages each having a series resistor and a shunt resistor;

an amplifier having one input connected to the output of said ladder network;

a source of reference voltage connected to the input of said ladder network;

a plurality of first switches directly responsive to said step bits respectively for switching the currents of corresponding stages of said ladder network into or out of the ladder output, providing a step-wise output from said ladder into said amplifier input;

an attenuator network comprising a plurality of serially-connected stages;

a plurality of second switches directly responsive respectively to said segment bits, each of said second switches controlling a corresponding stage of said attenuator network to connect it into or out of the attenuator network, the degree of attenuation provided by said attenuator network being a multiplicative function of the individual attenuation factors of the stages thereof which are connected in the attenuator network by the corresponding switches of said network, each stage of said attenuator network being individually manipulatable by its corresponding switch without having any effect on the attenuation factor introduced by any other attenuator stage, said attenuation factors being weighted non-linearly with respect to said segment bits; and

circuit means interconnecting said attenuator network in a negative feedback circuit between the output and input of said amplifier, said circuit means including means for producing a composite output signal from said amplifier representing the multiplication of said ladder output, as controlled by said step bits, by a factor corresponding to the net attenuation effected by said attenuator network as controlled by said individual segment bits.

4,363,025

SIGNAL GENERATING ARRANGEMENTS

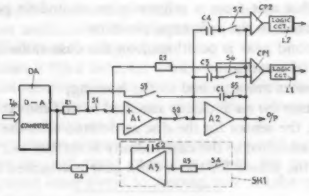
Howard Jackson, Maidstone, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed Mar. 25, 1981, Ser. No. 247,271

Claims priority, application United Kingdom, Apr. 2, 1980, 8011069

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **5 Claims**



1. A digitally controlled presettable analogue ramp signal generating arrangement comprising:

(A) digital to analogue converting means;

(B) integrator means consisting of

(i) a first stage which operates as an amplifier,

(ii) a second stage which operates as an integrator, and

(iii) switching means which,

(a) when the arrangement is in a first mode, interconnects said converter and said first and second stages so that the output of the converter means is applied to said second stage via said first stage, the first stage operates as a scaling amplifier and the output of the integrator means assumes a value representative of the output of the converter means, and

(b) when the arrangement is in a second mode, interconnects said converter means and said second stage and disconnects said first stage so that the output of the converter means is applied directly to said second stage and the output of the integrator means changes at a rate dependent on the output of the converter means; and

(C) analogue sample and hold means which periodically samples and holds the output of the arrangement and controls the output of the converting means to reduce

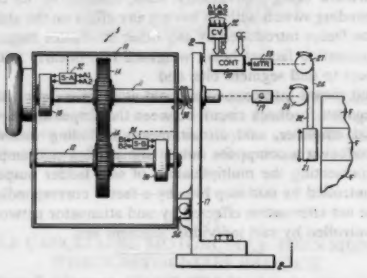
towards zero any deviation in the output of the arrangement from its desired value at the time of sampling.

4,363,026

POSITION ENCODER UPDATE MECHANISM AND METHOD

John K. Salmon, South Windsor, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Apr. 24, 1981, Ser. No. 256,768
Int. Cl.³ G08C *9/00*
U.S. Cl. 340—347 P **4 Claims**



1. A position encoder comprising a housing on a bracket and within the housing, coupled first and second gears and corresponding coded discs, and sensors for reading the code on each disc as it is rotated and providing signals which reflect the location of an object coupled to the encoder to rotate the gears, characterized in that:

the case is rotatably attached to the bracket about the axis of one of the gears and can be rotated at least one revolution on that axis from a reference to an update position and returned to the reference position;

the second gear is positioned on the case radially from the axis of rotation;

the sensors are attached to the housing;

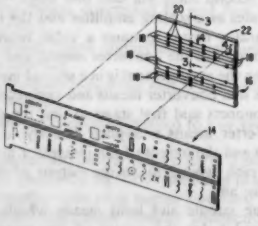
the sensor for each disc is attached to and movable with the case, the sensor for the disc associated with the one gear is also attached to the case radially from that axis of rotation and the sensor for the second gear is attached to the case.

4,363,027

TOUCH SENSITIVE CONTROL PANEL UTILIZING PYROELECTRIC MATERIAL

Michael J. Brienza, Ridgewood, N.J., assignor to The Singer Company, Stamford, Conn.

Division of Ser. No. 119,691, Feb. 8, 1980, Pat. No. 4,307,383. This application May 28, 1981, Ser. No. 267,971
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 R **1 Claim**



1. A control panel for an appliance having a multiplicity of operating capabilities, functions and conditions, said control panel comprising:

a backing member;

a layer of conductive material on a surface of said backing member;

a layer of pyroelectric material on said conductive layer;

a layer of insulative material on said pyroelectric layer, said insulative layer leaving selected areas of said pyroelectric layer exposed;

a plurality of non-intersecting elongated conductors on said insulative layer; and

a graphics display member overlying said conductors, said graphics display member having indicia thereon representative of said operating capabilities, functions and conditions of said appliance;

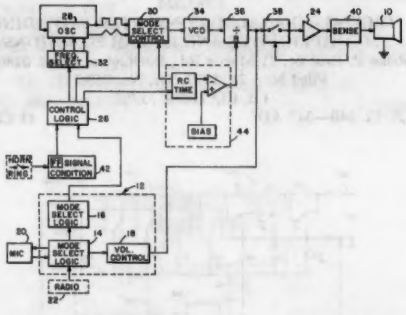
said selected areas of exposed pyroelectric material being located in registration with said indicia and selectively in contact with said conductors so that a binary coded combination of voltage pulses is applied to said conductors in response to a body portion of an operator touching one of said indicia, each of said indicia corresponding to a unique respective binary code.

4,363,028

ELECTRONIC SIREN

John J. Bosnak, Old Saybrook, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.

Filed Jul. 10, 1980, Ser. No. 167,444
Int. Cl.³ G08B *3/00*
U.S. Cl. 340—384 E **12 Claims**



1. Apparatus for generating an electrical signal which varies at an audible frequency comprising:

controllable oscillator means;

remote control means, said remote control means including a mode selector switch and encoder means for generating a binary coded output signal commensurate with the setting of said mode selector switch;

decoder means, said decoder means being located remotely from said remote control means and being responsive to the coded output of said remote control means for generating a plurality of gate control signals;

means delivering the coded output of said remote control means to said decoder means;

gate circuit means responsive to the control signals generated by said decoder means, said gate circuit means including switch means connected to said oscillator means, said gate circuit means changing the frequency and rate of change of frequency of said oscillator means output signal commensurate with the setting of said remote control means mode selector switch;

amplifier means;

means applying said oscillator means output signals as the input signal to said amplifier means; and

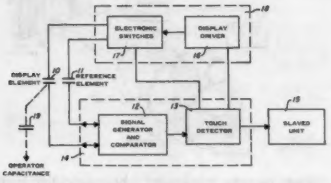
means for delivering signals amplified by said amplifier means to a loudspeaker.

4,363,029

SWITCH FOR SENSING PROXIMITY OF AN OPERATOR

Michael A. Piliavin, Plano, and James R. Toker, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 17, 1980, Ser. No. 207,584
Int. Cl.[3] G02F 1/13
U.S. Cl. 340—501 17 Claims



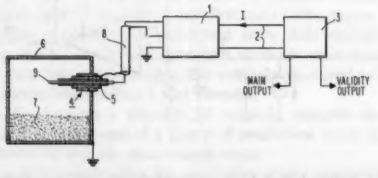
1. A device having at least two states comprising:
a. a reference element;
b. an active element having alterable electrical characteristics responsive to the proximity of an operator; and
c. means for,
(i) driving said reference element and said active element at a chosen level and producing signals therefrom, and for,
(ii) comparing the signal from said reference element and the signal from said active element and generating a comparison signal therefrom, and for,
(iii) altering the state of said device reponsive to said comparison signal.

4,363,030

FAIL-SAFE INSTRUMENT SYSTEM

Frederick L. Maltby, Jenkintown, and L. Jonathan Kramer, Warminster, both of Pa., assignors to Drexelbrook Engineering Company, Horsham, Pa.

Filed Nov. 30, 1979, Ser. No. 98,750
Int. Cl.[3] G08B 29/00
U.S. Cl. 340—511 30 Claims



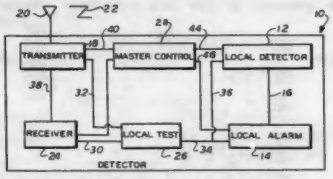
1. A two-wire system comprising a power supply and a receiver in one location and a transmitter in another location, a pair of signal wires connecting said transmitter with said receiver and carrying a varying signal, wherein said transmitter produces a first signal falling within a first predetermined signal range in response to a first set of detected input data, and a second signal falling within a second predetermined signal range in response to a second set of detected input data, said first and second signal ranges being spaced from one another and substantially different from short circuit and open circuit signals.

4,363,031

WIRELESS ALARM SYSTEM

Jack Reinowitz, 563 Union Rd., Spring Valley, N.Y. 10977

Filed Jul. 7, 1980, Ser. No. 166,162
Int. Cl.[3] G08B 23/00
U.S. Cl. 340—539 11 Claims



1. A detection system of the type intended to detect the occurrence of a local phenomena, and transmit at least one signal to other detectors to remotely sound an alarm, said system comprising:
I. a first detector which comprises:
a. first means for sensing the occurrence of the predetermined phenomena and generating a signal;
b. first means responsive to said signal from said first sensing means for generating a local alarm to thereby indicate the occurrence of the phenomena; and
c. first transmitting means electrically coupled and responsive to said signal from said first sending means to thereby wirelessly transmit a first signal indicative of the predetermined phenomena; and
II. at least a second detector which comprises:
a. second receiving means for receiving said first signal from said first transmitter and generating a signal;
b. second means responsive to said signal from said second receiving means for generating a separate local alarm to thereby indicate the occurrence of the phenomena; and
c. second transmitting means, responsive to said signal from said second receiving means, for wireless transmission of said first signal; and
III. at least a third detector which comprises:
a. third receiving means for receiving said first signal from either said first or second transmitting means and generating a signal; and
b. third means electrically responsive to said signal generated by said third receiving means for generating a separate local alarm to thereby indicate the occurrence of the phenomena.

4,363,032

SHEET FEEDING CONTROL DEVICE FOR USE IN A COIN WRAPPING MACHINE

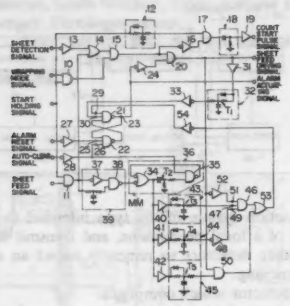
Toyoki Kimoto, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1980, Ser. No. 201,611
Claims priority, application Japan, Dec. 13, 1979, 54-162120
Int. Cl.[3] G08B 21/00; B65B 57/04
U.S. Cl. 340—679 6 Claims

1. A sheet feeding control device for use in a coin wrapping machine wherein coins accumulated in a predetermined number are wrapped with a wrapping sheet by wrapping rollers, said device comprising:
sheet feeding rollers for feeding the wrapping sheet toward the wrapping rollers;
a sensor positioned adjacent the wrapping rollers along the path of the wrapping sheet for detecting the presence of the wrapping sheet in a given position along said path to generate a sheet detection signal;
a cutter positioned between said sensor and said sheet feeding rollers for cutting the wrapping sheet at the end of the wrapping operation;
driving means for driving said sheet feeding rollers to ad-

vance the leading end of the wrapping sheet toward the wrapping rollers after the wrapping sheet is cut by said cutter; and

stopping means for stopping said sheet feeding rollers in response to said sheet detection signal so as to stop the



leading end of the wrapping sheet at a position near said sensor until the wrapping operation is started;

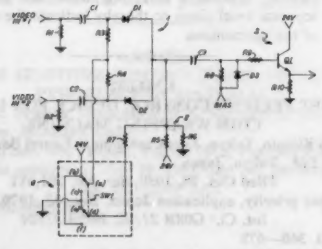
whereby the wrapping sheet is then advanced from a position near the sensor once the wrapping operation is started.

4,363,033

VIDEO SWITCH CIRCUIT

John D. Lovely, Batavia, N.Y., assignor to GTE Products Corporation, Seneca Falls, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,702
Int. Cl.[3] H04N 5/22; H03K 17/74
U.S. Cl. 358—181 16 Claims



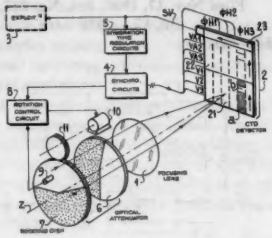
1. A video switch comprising diode means having a first and a second input coupled respectively to a first and a second source of signals, and an output, said diode means including a first diode having an anode coupled to said first input and a second diode having a cathode coupled to said second input, the cathode of said first diode and the anode of said second diode being coupled in common to said output; a bias source coupled to the output of said diode means for applying a bias voltage to the output thereof; and control means coupled to the first and second inputs of said diode means for selectively applying respective first and second control signals thereto for determining, in conjunction with said bias source, which of said signal sources is coupled to the output of said diode means.

4,363,034

VIDEO PICTURE GENERATOR PHOTODETECTOR

Bernard Grancoin, and Christian Pepin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 31, 1980, Ser. No. 221,916
Claims priority, application France, Jan. 4, 1980, 80 00170
Int. Cl.[3] H04N 3/14
U.S. Cl. 358—213 11 Claims



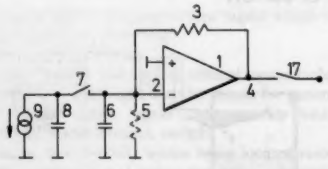
1. A video picture generator photodetector using a solid state camera with charge transfer operating by vertical frame transfer and comprising: an optical system for focusing the radiation onto the image area of a charge transfer array detector; a generator for the synchronization signals of the detector; and means for regulating the detector sensitivity grouping means for the control of the video signal by varying the integration time during which the electrons are collected in the picture area and optical attenuation means using density-carrying disks for chopping the picture area during each frame period substantially during the time interval when the collected charges are transferred to the store area of the detector.

4,363,035

METHOD AND APPARATUS FOR SIGNAL PICK-UP FROM SEMICONDUCTOR IMAGE OR LINE SENSORS

Klaus Lehmann, Mühltal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,448
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015806
Int. Cl.[3] H04N 3/14, 5/14, 5/34
U.S. Cl. 358—213 7 Claims



1. Method of picking up signals from a semiconductor image or line sensor at intervals defined by the frequency of a first set of periodic pulses, comprising the steps of:

charging a capacitance (6) associated with said sensor at the output thereof upon occurence of each of a first set of periodic pulses in accordance with the state of said sensor;

maintaining the charge of said capacitance for a first part of the interval between pulses of said first set;

deriving a signal from said charge of said capacitance during a portion of said first part of said interval offset in time from said first set of pulses sufficiently for the dying away of transient disturbances related to said first set of pulses, and

discharging said capacitance during a second part of said interval following said first part thereof.

4,363,036

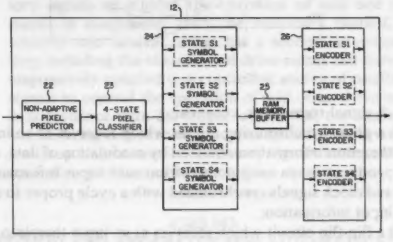
METHOD AND APPARATUS FOR COMPRESSING DIGITAL DATA USING NON-ADAPTIVE PREDICTIVE TECHNIQUES

Ambati Subramaniam, Plano, Tex., assignor to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Mar. 16, 1981, Ser. No. 244,352

Int. Cl.³ H04N 7/12

U.S. Cl. 358—261 **34 Claims**



1. An apparatus for the processing of digital data derived from an image, comprising:

first means for converting said digital data into varying run lengths of a first type data element and a second type data element;

first receiving means for receiving said first and second types of data elements from said first conversion means, including first storage means for storing a specified number of data elements in a predefined pattern at any particular time;

means for predicting for each original data element received from said conversion means the type of said data element based upon the types of data elements stored within said first storage means;

means for classifying each of said predicted data elements into one of a plurality of source states, and providing a signal representative of said source state, wherein each source state is indicative of the degree of probability that said predicted data element is in error;

first means for comparing each of said predicted data elements from said prediction means to its corresponding original data element from said first conversion means to generate a plurality of prediction error data elements, each of said prediction error data elements maintaining the same relationship to a given source state signal as its corresponding predicted data element;

means for forming a plurality of symbols, wherein each symbol is comprised of a group of prediction error data elements having the same source state;

first means for controlling the generation of said symbols by said formation means;

second storage means, coupled to said formation means, for storing said symbols in the sequence in which they are generated by said formation means;

third storage means, coupled to said second storage means, for storing a plurality of code words which are representative of each of said symbols contained in said second storage means;

and means for outputting selected code words from said third storage means over a transmission medium, in response to receipt by said third storage means of symbols corresponding to said selected code words.

4,363,037

APPARATUS AND PROCESS FOR RECORDING AN IMAGE FREE OF LINE STRUCTURE

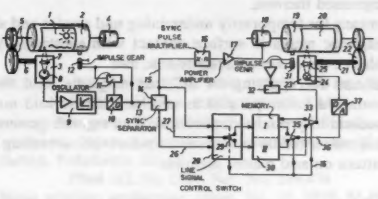
Heinz Taudt, Kiel, Fed. Rep. of Germany, assignor to Dr.-Ing. Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

Continuation of Ser. No. 821,657, Aug. 4, 1977, abandoned. This application Mar. 24, 1960, Ser. No. 133,878

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1976, 2635674

Int. Cl.³ A04N 1/22

U.S. Cl. 358—296 **7 Claims**



1. In a process for line-by-line recording of an image with the aid of an intermediate memory,

the steps comprising:

generating scanning signals by sensing the light values of the image along successive, substantially adjacent scanning lines, each of said scanning lines having a predetermined width,

converting the scanning signals into electrical signals,

storing the electrical signals associated with at least one of said scanning lines in said intermediate memory,

sequentially reading out at least two times at least a portion of the electrical signals associated with each of said scanning lines, respectively, from said intermediate memory, so as to obtain groups of successive electrical signals representing the light values for recording groups of sub-lines, each group of sub-lines corresponding to a scanning line, and

sequentially recording said groups of sub-lines, each of said sub-lines having a width sufficiently smaller than the width of said scanning lines, so that an image substantially free of any line structure and loss in resolution is obtained.

4,363,038

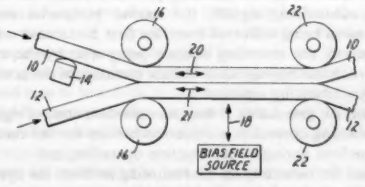
CONTACT DUPLICATION SYSTEM USING ANISOTROPIC MAGNETIC RECORDING MEDIA

Richard E. Fayling, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 14, 1980, Ser. No. 168,675

Int. Cl.³ G11B 5/86, 5/74; G06K 19/06

U.S. Cl. 360—17 **15 Claims**



1. A signal duplicating system comprising:

(a) a master magnetic recording medium having magnetic anisotropy associated with at least one easy and one hard axis of magnetization, said medium being characterized by an initial remanent magnetic moment after a substantially saturating magnetizing field is applied along an easy axis

of said medium, and being further characterized by a subsequent remanent magnetic moment of at least 40% of said initial remanent magnetic moment after an AC magnetic field having an intensity equal to twice the easy axis coercive force of said master medium is applied parallel to a hard axis of the medium;

(b) means for impressing a magnetic recording pattern on said master recording medium in the form of a localized magnetic field pattern therein;

(c) a slave magnetic recording medium capable of becoming remanently magentized when an external magnetic field is impressed thereon;

(d) means for temporarily maintaining said master and slave magnetic media in surface contact with substantially no relative movement therebetween; and

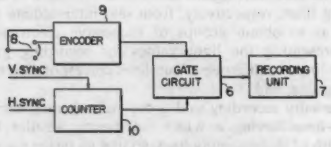
(e) means for applying an AC bias magnetic field to the contacted media parallel to said hard axis of said master medium to promote duplication of a magnetic pattern on said master media to said slave media without erasing said pattern on said master medium.

4,363,039

AUTOMATIC OPERATION CONTROL APPARATUS FOR A PCM RECORDING AND REPRODUCING SYSTEM

Keizo Nishimura, Yokohama, and Yasunori Kanazawa, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1979, Ser. No. 63,475
Claims priority, application Japan, Aug. 7, 1978, 53-95494
Int. Cl.³ H04N *5/785*
U.S. Cl. 360—19.1 **16 Claims**



1. An automatic operation control apparatus for a PCM recorder system in which a PCM signal is recorded on a recording medium together with vertical and horizontal synchronizing signals, the PCM signal including a PCM sound signal recorded on the recording medium during a predetermined first horizontal scanning period of a plurality of horizontal scanning periods arranged between vertical synchronizing signals, the automatic operation control apparatus comprising a recording operation device including:

detector means including a recording counter for detecting a second horizontal scanning period between the vertical synchronizing signals, the second horizontal scanning period being different from the first horizontal scanning period, the recording counter being reset by the vertical synchronizing signals to initiate counting of the horizontal synchronizing signals;

means for generating at least an operation control signal for enabling control of a drive mechanism for the recording medium during a reproduction operation; and

means for recording on the recording medium the operation control signal generated by said operation control signal generator means when said detector means detects the second horizontal scanning period;

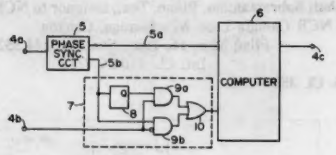
whereby the recording medium includes the operation control signal in at least one second horizontal scanning period between the vertical synchronizing signals, the operation control signal being reproducible for enabling control of the recording medium during a reproduction operation.

4,363,040

SIGNAL TRANSDUCER

Shuichi Inose, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,162
Claims priority, application Japan, Jun. 21, 1979, 54-78441
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—51 **7 Claims**



1. A signal transducer, comprising:

(a) a phase synchronizing circuit which receives as an input thereinto information obtained by modulation of data, and produces as an output therefrom said input information and clock signals synchronized with a cycle proper to said input information;

(b) a flip-flip circuit which receives as an input thereinto the clock signal output from said phase synchronizing circuit;

(c) a first AND circuit which receives at one of the inputs thereof an output from said flip-flop circuit;

(d) a second AND circuit which receives at one of the inputs thereof the clock signals output from said phase synchronizing circuit;

(e) signal input means which receives thereinto input signals to open the other input of said first AND circuit and to open any one of the other inputs of said second AND circuit;

(f) an OR circuit which receives as input thereinto the outputs from said first and second AND circuits; and

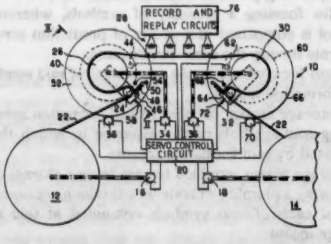
(g) extracting means which receives as input thereinto the information output from said phase synchronizing circuit and the output from said OR circuit, and which extracts said data from said information.

4,363,041

DUAL CAPSTAN TAPE TRANSPORT HAVING CONTROLLED TAPE TENSION

Guy Lelandais, Bures sur Yvette, France, assignor to Enertec, Montrouge, France

Filed Dec. 22, 1980, Ser. No. 219,454
Claims priority, application France, Dec. 26, 1979, 79 31649
Int. Cl.³ G11B *15/18*; B65H *25/22*
U.S. Cl. 360—71 **7 Claims**



1. A tape transport for use with transducer means to transport tape along a predetermined path extending past said transducer means, comprising:

two capstans, each disposed at a respective end of said predetermined path;

two rollers, each disposed adjacent a respective one of said capstans and arranged to guide tape beyond the respective end of said path in partial wrapping engagement about its respective capstan;

two drive means each coupled to a respective one of said capstans; and

control means coupled to said drive means and arranged to control operation thereof to drive said capstans at differing torques whereby to induce a controlled tension in tape extending along said path;

wherein said control means has a first servo-control loop known per se including one of said drive means and responsively coupled to an independent source of oscillatory signals to control the operation of said one drive means in accordance with the frequency thereof, and wherein said control means has a second servo-control loop including the other of said drive means and normally responsively coupled to a controlled source of oscillatory signals to control the operation of said other drive means in accordance with the frequency thereof, the controlled source being responsively coupled to said first servo-control loop to generate its oscillatory signals in dependence upon the operation of said one drive means.

4,363,042
METHOD AND APPARATUS FOR AUTOMATICALLY TRACKING A MAGNETIC TAPE

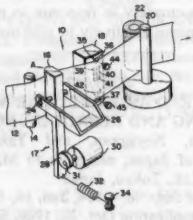
Kenji Kimura, Tachikawa; Sinichi Saitou, Hachioji; Toyoo Nishiyama, Musashimurayama; Toshikazu Kato, Hachioji; Misao Shimoda, Hamura; Seizo Watanabe, Hachioji; Ken Satoh, Akikawa, and Tutomu Shibata, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,813

Claims priority, application Japan, Apr. 2, 1979, 54-39511

Int. Cl.³ G11B *15/60*

U.S. Cl. 360—71 **10 Claims**



1. A method for automatically tracking a magnetic tape running against a magnetic head having a vertical assembly of vertically extending head gaps formed therein, said magnetic head being fixed during running of the tape thereagainst which comprises the steps of:

detecting the vertical position of a magnetic tape during its run by a means for detecting, at a position aligned vertically with the vertical axis of the vertical assembly of vertically extending head gaps formed in the magnetic head, at least one of the positions of the upper and lower edges of the magnetic tape, and generating data corresponding to the detected position;

determining any displacement of the magnetic tape from its standard vertical position from detected data; and

varying the mode in which a tape edge position-compensating means for applying a tensile force to the magnetic tape by contact with the upper or lower edge portion of the tape in the sideward direction of the tape is pressed against the magnetic tape in order to control the tensile force applied by the tape edge position-compensating means to the magnetic tape to thereby control the vertical position of the magnetic tape relative to said magnetic head, thereby enabling the running magnetic tape to maintain its standard vertical position.

4,363,043
CIRCUIT ARRANGEMENT FOR SKIPPING MARKED PORTIONS OF A RECORDING TAPE

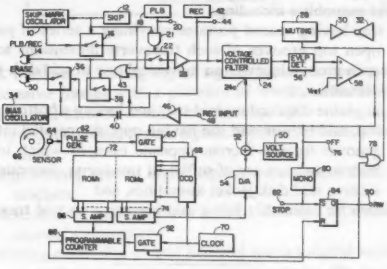
Masatsugu Kitamura; Hideo Onoye, and Hiroki Shimizu, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 16, 1980, Ser. No. 169,474

Claims priority, application Japan, Jul. 16, 1979, 54-89986

Int. Cl.³ G11B *17/00*

U.S. Cl. 360—72.1 **14 Claims**



1. An automatic skipping control circuit for a tape reproducing apparatus having means for driving a tape in playback, fast-forward or rewind mode in response to a speed control signal, a transducer head, and means for reproducing materials recorded in said tape when said tape is driven in said playback or fast-forward mode by contacting said tape with said transducer head, wherein selected portions of said tape are recorded with a skip mark signal of a predetermined frequency, comprising:

voltage controlled filter means having a passband of which the frequency is variable in accordance with a frequency control signal applied thereto, the passband frequency of the filter means normally corresponding to said predetermined frequency of the skip mark signal when the tape is driven in said playback mode, said filter means being responsive to an output signal from said transducer head for generating a fast-forward speed control signal to cause said tape to be driven in said fast-forward mode, whereby the frequency of the skip mark signal detected by said transducer head becomes higher than said predetermined frequency; and

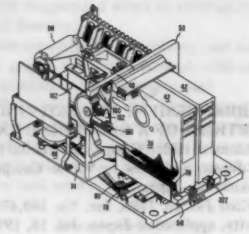
means for generating a said frequency control signal in response to the occurrence of said fast-forward speed control signal, the magnitude of said frequency control signal being a function of a varying diameter of the convolutions of said tape wound on a takeup reel of said tape reproducing apparatus, whereby the passband frequency of said voltage controlled filter means is varied to correspond to the increased frequency of the detected skip mark signal.

4,363,044

TRAY FOR MAGNETIC DISK DRIVE MACHINE

Daniel O. Castrodale, and Thomas R. Fournier, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 888,437, Mar. 20, 1978, Pat. No. 4,170,030.
This application May 29, 1979, Ser. No. 43,409
Int. Cl.³ G11B *23/02, 17/04, 5/82*
U.S. Cl. 360—98 2 Claims



1. Apparatus for storing a series of information carrying disk jacket assemblies including:

a tray having spaced portions providing a series of parallel open top grooves of such transverse dimensions so that each groove receives an individual one of said disk-jacket assemblies,

a magazine disposed on said tray and having a bottom and a top, said bottom and top having opposite parallel internal grooves formed therein opposite ones of which in said bottom and top are of sufficient transverse dimensions to receive said disk-jacket assemblies, and

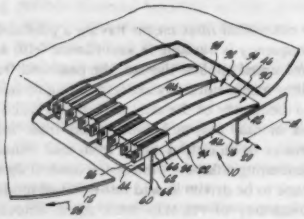
means for releasably fixing said magazine on said tray.

4,363,045

MAGNETIC TRANSDUCER SUSPENSION DEVICE

Robert W. Herman, Laguna Beach, Calif., assignor to New World Computer Company, Inc., Costa Mesa, Calif.

Filed Oct. 20, 1980, Ser. No. 199,092
Int. Cl.³ G11B *5/48, 5/54, 5/60*
U.S. Cl. 360—104 11 Claims



1. A suspension device for magnetic transducers comprising:

a spring member;

a transducer attachment clip engaged by said spring member and adapted to be affixed to said transducer, said spring member adapted to apply biasing force to said attachment clip; and

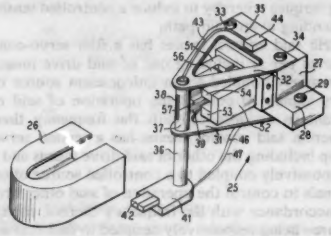
pivot means disposed between said spring member and said attachment clip for allowing said attachment clip to pivot with respect to said spring member, said pivot means defining an axis of rotation for said attachment clip.

4,363,046

DEFLECTABLE TRANSDUCER HEAD ASSEMBLY

Etsuro Saito, Ayase, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,742
Claims priority, application Japan, May 24, 1980, 55-69118
Int. Cl.³ G11B *21/10, 21/18, 5/52*
U.S. Cl. 360—106 17 Claims



1. A deflectable transducer head assembly comprising:

(a) a transducer means for transducing signals;

(b) a base member;

(c) a pair of deflectable members spaced apart and mounted with first ends attached to said base member and extending parallel to each other and with second ends remote from said first ends and moveable together;

(d) means connecting said second ends of said deflectable members together;

(e) a moving coil mounted to move with said deflectable members in response to a control signal applied thereto;

(f) magnetic means mounted adjacent said moving coil for supplying a magnetic flux thereto; and

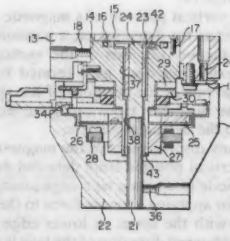
(g) said transducer means mounted on said connecting means and displaced in a predetermined direction to trace a signal track accurately in response to movement of said moving coil means relatively to said magnetic means.

4,363,047

ROTARY HEAD ASSEMBLY FOR MAGNETIC RECORDING AND REPRODUCING DEVICE

Teruo Maruyama, Neyagawa, and Takashi Ichiyanagi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 4,564, Jan. 18, 1979, Pat. No. 4,251,840. This application Oct. 29, 1980, Ser. No. 201,737
Claims priority, application Japan, Jan. 27, 1978, 53-8741
The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.
Int. Cl.³ G11B *15/60*
U.S. Cl. 360—107 2 Claims



1. A rotary head assembly for a magnetic recording and reproducing device, comprising:

a stationary center shaft having one end which is securely

held in position and a free end, with a flange adjacent said free end;

a stationary cylinder having a cylindrical surface coaxial with said stationary center shaft;

a rotary cylinder disposed adjacent to one end of said stationary cylinder for rotation about the axis of said stationary center shaft and having a cylindrical surface the diameter of which is the same as that of said cylindrical surface of said stationary cylinder, said rotary cylinder having an axial cylindrical recess therein, said recess including a shoulder portion for receiving said flange;

means for driving said rotary cylinder;

a magnetic head mounted on said rotary cylinder;

said stationary center shaft being stationary relative to said stationary cylinder, the free end of said stationary center shaft extending into said cylindrical recess for supporting said rotary cylinder, said free end having a region of engagement with the bottom of said recess which has an area substantially less than the cross sectional area of said shaft;

said rotary cylinder including a rotary sleeve having a sealed upper end defining the bottom of said recess and an open lower end;

a lubricating fluid disposed in the space between said rotary sleeve and said stationary center shaft so as to provide a hydraulic bearing means between said stationary center shaft and rotary cylinder, said hydraulic bearing means having (i) a radial bearing portion defined by a peripheral surface part of said shaft adjacent said flange and relatively remote from said free end, and the adjacent inner surface part of said rotary sleeve, one of said surface parts having a circumferential spiral or helical groove therein for subjecting said fluid to a pumping effect upon rotation of said rotary sleeve; and (ii) a thrust bearing portion defined by said shoulder portion and the adjacent major surface of said flange.

4,363,048

TIME COUNTING CLOCK GENERATOR

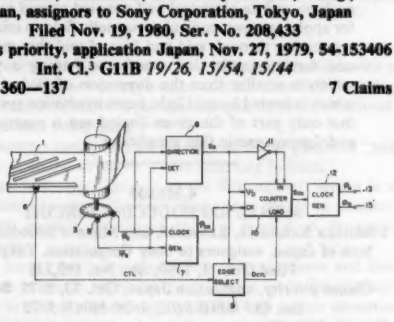
Shosuke Tanaka, Yokohama, and Fumiyoshi Abe, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,433

Claims priority, application Japan, Nov. 27, 1979, 54-153406

Int. Cl.³ G11B *19/26, 15/54, 15/44*

U.S. Cl. 360—137 **7 Claims**



1. A time counting clock generator for a video tape recorder comprising, a pulse generator for generating a pulse signal indicative of tape velocity in response to the movement of a video tape, a direction indicating pulse generator for generating a direction indicating pulse output from said pulse signal, a dividing counter for dividing said pulse signal for generating a timer counting clock signal, said direction indicating pulse output being supplied to an up-down control input of said dividing counter, a control signal reproducing circuit for reproducing control signals recorded on said video tape, and a counter presetting means for presetting said dividing counter to zero when said direction indicating pulse output indicates forward movement of said video tape and to the maximum value when said direction indicating pulse output indicates reverse movement of said video tape at each occurrence of said control signal.

4,363,049

METHOD AND APPARATUS FOR EDITING DIGITAL SIGNALS

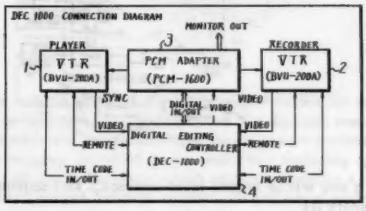
Tadashi Ohtsuki, Kanagawa; Shinichi Kazami, Tokyo; Shinji Anjyu, Saitama, and Masato Tanaka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,525

Claims priority, application Japan, May 31, 1979, 54-68201; Jun. 7, 1979, 54-71539; Jun. 7, 1979, 54-71540

Int. Cl.³ G11B *27/02, 5/00*

U.S. Cl. 360—13 **12 Claims**



1. Method of editing digital signals which are composed of successive frames with a plurality of words included in each frame, said method comprising the steps of:

reproducing first digital signals from a first recording medium;

reproducing second digital signals from a second recording medium;

determining editing points for said first and second digital signals, respectively;

storing either one of said first and second digital signals for a predetermined duration which includes the respective one of said editing points;

recording the stored digital signals at least in the neighborhood of said respective editing point on said first recording medium; and

recording on said first recording medium, subsequent to said stored digital signals, said second digital signals with the recorded stored digital signals forming a discontinuity-free transition between said second digital signals and said first digital signals as recorded on said first recording medium.

4,363,050

DIGITIZED AUDIO RECORD AND PLAYBACK SYSTEM

Andrew A. Modla, Newtown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,756

Int. Cl.³ G11B *5/00*

U.S. Cl. 360—32 **9 Claims**

1. A system for processing an analog signal comprising:

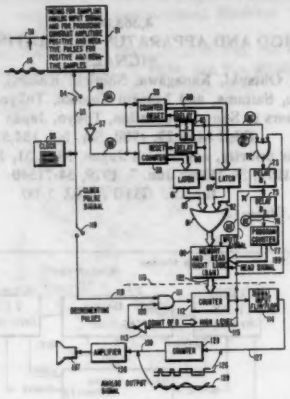
means responsive to said analog signal to produce sequences of binary 1's for those portions thereof whose amplitude is greater than a given signal level and to produce sequences of binary 0's for those portions thereof whose amplitude is less than said given signal level;

first means responsive to each sequence, in the order of their occurrence, to form an N bit digital word of a fixed length and representing the number of bits in said each sequence;

second means for sequentially storing said digital words as they occur to form a series of co-existent sequentially stored digital words;

third means responsive to said sequentially stored digital

words, in said order of occurrence, to produce a two level signal whose first level represents said sequences of binary



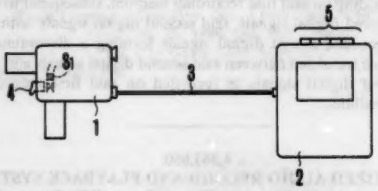
1's and whose second level represents said sequences of binary 0's.

4,363,051

VIDEO TAPE RECORDER ARRANGED TO BE CONNECTED WITH A VIDEO CAMERA

Masaya Maeda; Noritsugu Hirata, and Hiroyuki Takimoto, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1980, Ser. No. 206,486
Claims priority, application Japan, Nov. 14, 1979, 54-147254
Int. Cl.³ H04N 5/78
U.S. Cl. 360—33.1 11 Claims



1. A video tape recorder which allows a video camera having a coupling device to be connected to the recorder, comprising:

a coupling part for electrically connecting the video camera to the video tape recorder when the coupling device of the video camera is attached to said coupling part;

stopping operation means for bringing the video tape recorder to a stop condition when the recorder is in a video recording state; and

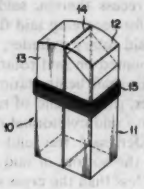
means coupled to said stopping operation means for nullifying the operation of said operating means, said nullifying means being arranged to be controlled by the video camera connected to said coupling part and to nullify the operation of said stopping operation means at least during a picture taking operation by the video camera when the video camera is connected to said coupling part.

4,363,052

THERMOMAGNETIC RECORDING DEVICE

Naohiro Hanaoka, Hachioji, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,283
Claims priority, application Japan, Jul. 17, 1979, 54-90659
Int. Cl.³ G11B 5/02, 5/22, 5/25
U.S. Cl. 360—59 8 Claims



1. A thermomagnetic recording device for recording information on a magnetic recording medium with a magnetic recording section having magnetic anisotropy across the thickness thereof, comprising:

a light beam irradiation system for applying a light beam to said magnetic recording section to heat said magnetic recording section over a given area, thereby reducing the coercive force of the heated section; and

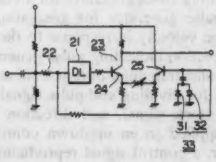
a single-pole magnetic head including a ferromagnetic thin membrane of high permeability having an end face located opposite to said magnetic recording section, said ferromagnetic thin membrane extending perpendicularly to said magnetic recording section, a main body supporting said thin membrane, said main body including a pair of nonmagnetic half pieces forming a nonmagnetic distal end portion and a ferromagnetic proximal portion, said distal end portion comprising said end face of the head, said ferromagnetic thin membrane being held between both said half pieces and between said nonmagnetic portions at the portion of the head facing the magnetic recording medium and an electrical coil coupled to said main body for applying a perpendicular magnetic field to said recording section through said end face of said thin membrane, said ferromagnetic thin membrane having a thickness which is smaller than the dimension of said given area which is heated by said light beam irradiation system such that only part of the given heated aea is magnetized by said ferromagnetic thin membrane.

4,363,053

SIGNAL REPRODUCING CIRCUIT

Yoshitaka Kanamoto, Kawasaki, and Makoto Ishiodori, Ebina, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,228
Claims priority, application Japan, Oct. 23, 1979, 54-136758
Int. Cl.³ G11B 5/02, 5/04; H04N 5/78
U.S. Cl. 360—67 5 Claims



1. Signal reproducing circuit for an angular modulated signal, comprising:

(a) a delay means for receiving and delaying an incoming

angular modulated signal by predetermined times τ, and 2τ;

(b) a mixing means for mixing said incoming angular modulated signal and said 2τ-delayed angular modulated signal;

(c) a signal limiter means receiving the output of said mixing means and limiting the amplitude of signals derived from said mixing means; and

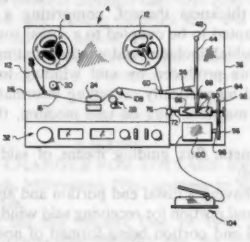
(d) an adding means receiving the outputs of said delay means and said signal limiter means and adding in said opposite polarity the signals from said signal limiter means and τ-delayed angular modulated signal, whereby an equalized angular modulated signal is derived from said adding means.

4,363,054

APPARATUS AND METHOD FOR OSCILLATING THE TAPE OF A TAPE PLAYER

Ralph G. Laycock, 508 E. 600 South, Orem, Utah 84057

Filed May 5, 1980, Ser. No. 146,487
Int. Cl.³ G11B *15/18, 15/00*
U.S. Cl. 360—72.1 **7 Claims**



1. Tape oscillating apparatus for use in combination with a tape player adapted to reproduce sounds recorded on tapes when the tapes are moved past the tape player's playback head, said apparatus comprising

first support means located on one side of the playback head and mounted to move in an oscillatory fashion,

first guide means disposed on the first support means in a position to allow the tape of the tape player to continuously contact and extend about a portion of the guide means,

drive means for causing said first support means and first guide means to repetitively oscillate in a continuous fashion to thereby alternately pull the tape in one direction past the playback head and allow return of the tape in the other direction to thus cause the tape to repetitively and continuously oscillate longitudinally at the playback head,

second movable support means located on the other side of said playback head and including a resilient element biased to return to a rest position when moved from such position, and

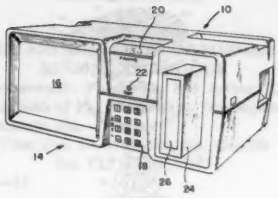
second guide means disposed on said second support means in a position to allow the tape to continuously contact and extend about a portion of the guide means so that when the tape is pulled by the first guide means in said one direction the second guide means maintains a tautness of the tape while alternately allowing movement of the tape in said one direction and causing the tape to return in the other direction.

4,363,055

CONTROL SYSTEM FOR AUDIO-VISUAL PROJECTOR

Michael G. Lee, Redmond, Wash., assignor to Indal Corporation, Bellevue, Wash.

Filed Sep. 15, 1980, Ser. No. 187,313
Int. Cl.³ G11B *31/00*; G03B *31/00*
U.S. Cl. 360—80 **15 Claims**



1. A control system for an audio-visual device for sequentially projecting a plurality of frames of a filmstrip responsive to actuation of a film advance mechanism and for presenting an audio program recorded on an audio tape including spaced-apart coded signals each of which uniquely identifies a respective frame of said filmstrip so that each portion of said tape is associated with a respective film frame, said control system comprising:

sync frame detector means for generating a reset signal responsive to projection of a predetermined sync frame;

film frame counter means incremented responsive to actuation of said film advance mechanism and reset by the reset signal from said sync frame detector means such that a digital word at the output of said counter identify the frame being projected;

tape decoder means receiving the coded signals on said audio tape and generating a digital word indicative of the film frame associated with the coded signal last appearing in said audio program; and

comparator means for actuating said advance mechanism until the digital word at the output of said film frame counter means is equal to the digital word at the output of said tape decoder means whereby the frames of said filmstrip are advanced in synchronism with said audio program.

4,363,056

DISK HOUSING FOR DISK DRIVE MASS STORAGE UNIT

Charles M. Riggle, Acton, Mass.; Christopher A. Pollard, and John D. Read, both of Monument, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 29, 1980, Ser. No. 126,024
Int. Cl.³ G11B *5/012*
U.S. Cl. 360—98 **5 Claims**

1. A housing assembly for housing a disk for use in a mass information storage apparatus, the disk being supported on a spindle having first and second ends, said housing assembly comprising:

A. first and second housing members each including

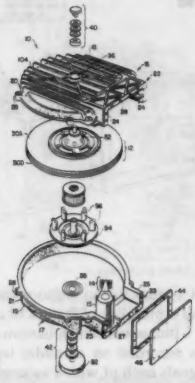
(i) a first and second generally circular portion having a rim,

(ii) first and second generally rectangular extension means each generally coplanar with a respective one of said circular portions defining an extension housing and having an edge, and

(iii) flange means depending from at least a substantial continuous portion of said rim and from the portions of said edge of said extension means adjacent to said circular portions, the distal edges of said extension means being free, and the distal edges and said flange means

forming an opening in said housing assembly, said flange means further having mating surfaces,

B. means for coupling together said mating surfaces of said flanges, to rotatably support the disk on the spindle inside of said housing assembly, and



C. removable cover means for sealing the opening defined by said extension housing means, thereby to seal the interior of said housing assembly from contaminants outside said housing assembly.

4,363,057

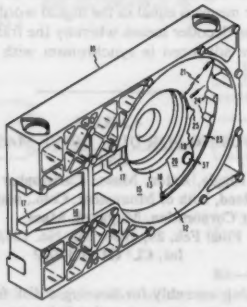
RECIRCULATING FILTER DUCT DESIGN

Michael M. Siverling, and Stephen E. Wheeler, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 57,631, Jul. 16, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,810

Int. Cl.³ G11B *23/02, 25/04*

U.S. Cl. 360—98 **12 Claims**



1. A magnetic disk memory comprising:

disk means supported for rotation about a central axis;

motive means operatively connected to said disk means to cause rotary motion about said central axis;

cover means enclosing said disk means and including shroud means adjacent at least one surface of said disk means;

a duct formed in said shroud means having an inlet adjacent the periphery of said disk means and an outlet underlying said disk means and radially inward of said inlet;

a filter means in said duct intermediate said inlet and outlet; and

a deflector adjacent said outlet opening adjacent the side thereof first approached by a point on said rotating disk means and presenting a surface inclined toward said disk means whereby the clearance between the deflector and disk means is progressively reduced in the direction of disk means rotation.

4,363,058

MAGNETIC RECORDING DEVICE

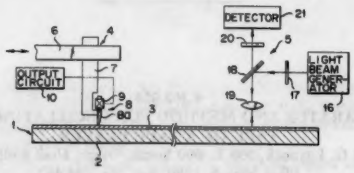
Naohiro Hanaoka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 1, 1980, Ser. No. 145,734

Claims priority, application Japan, May 15, 1979, 54-59484

Int. Cl.³ G11B *5/22, 5/20*

U.S. Cl. 360—122 **9 Claims**



1. In a megnetic recording device for recording information on a track of a recording medium having magnetic anisotropy across the thickness thereof, comprising a flux producing winding adapted to be coupled to a signal source, and a magnetic head which includes said winding and means for guiding magnetic flux produced by said winding to said recording medium and magnetically recording information corresponding to said magnetic flux on said medium, the improvement wherein:

said magnetic flux guiding means of said magnetic head includes:

a chip having a distal end portion and an opposite proximal end portion for receiving said winding thereon, said distal end portion being formed of nonmagnetic material and said proximal end portion including a ferromagnetic portion located at said winding receiving portion of said chip; and

a single ferromagnetic thin membrane held by said chip, said single thin membrane having one end thereof located at said distal end portion of said chip and the other end thereof extending to the winding receiving portion of said chip, said single thin membrane passing magnetic flux produced from said winding to said one end thereof and being so disposed that its thickness direction extends in the same direction as the track of the recording medium, whereby information is recorded on said recording medium through said one end of said single thin membrane located at said distal end of said chip;

said chip including a pair of chip pieces with said ferromagnetic thin membrane held therebetween, one of said chip pieces being formed completely of nonmagnetic material, and the other of said chip pieces comprising a nonmagnetic distal end portion located at the distal end of said chip and said ferromagnetic proximal end portion located at said winding receiving portion of said chip, the magnetic flux produced from said winding being guided to said single ferromagnetic thin membrane through said proximal end portion; and

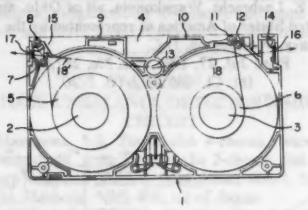
a read out means is provided which includes a photomagnetic reproducing mechanism for directing a light beam to said recording medium and for detecting a change of the rotation angle of the plane of polarization of the light reflected from said recording medium.

4,363,059

MAGNETIC TAPE CASSETTE

Yoneo Matsuzawa; Yoshio Kawakami, and Norifumi Kajimoto, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 193,293
Claims priority, application Japan, Oct. 19, 1979, 54-135804
Int. Cl.³ G11B *23/04, 15/06*
U.S. Cl. 360—132 2 Claims



1. In a magnetic tape cassette holding a wound magnetic tape comprising a transparent base film and a magnetic layer having a thickness of 5 microns or less coated on the base film, an improvement comprising:

a first hole means located in said cassette for inserting a light source means;

second hole means located on the frame of said cassette for passing light emitted through said first hole means with said magnetic tape passing between said first hole means and said second hole means; and

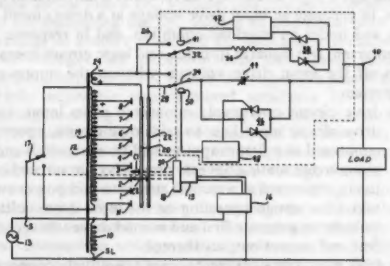
light-shielding filter means having light transmittance in the range between 0.5 and 10 percent fitted over said second hold means.

4,363,060

ARCLESS TAP CHANGER FOR VOLTAGE REGULATOR

Frederick A. Stich, Milwaukee, Wis., assignor to Siemens-Allis, Inc., Atlanta, Ga.

Continuation of Ser. No. 105,081, Dec. 19, 1979, abandoned.
This application Dec. 18, 1981, Ser. No. 332,365
Int. Cl.³ H02H *7/20*
U.S. Cl. 361—8 6 Claims



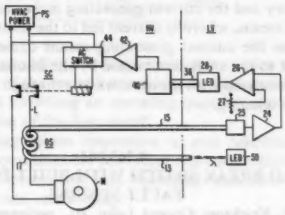
1. In a power line voltage regulator of the tap changing type including a main winding and a tapped auxiliary winding, a plurality of taps on said auxiliary winding, a pair of selector contacts for engaging the taps, a collector coupled to each selector contact, drive means for operating said selector contacts and an output terminal adapted to be coupled to a load, the improvement comprising an auxiliary system for effecting arcless engagement and disengagement of said taps by said selector contacts including first and second terminals coupled to the first and second collectors, respectively; a first selector switch for engaging one or the other of said terminals; a current switch coupled between said selector switch and said output terminal; a first thyristor circuit coupled in shunt about said current switch; a gating circuit coupled to said thyristor circuit for energizing said thyristor circuit to allow said current switch to open arclessly; current limiting impedence means; means for electrically coupling said impedance means to one of said first or second terminals and circuit switching means for coupling said impedence means in circuit between said output terminal and said first or said second collectors.

4,363,061

ELECTRIC MOTOR AND TRANSFORMER LOAD SENSING TECHNIQUE

Eugene G. Vaerewyck, Pittsburgh, and Arthur E. Anderson, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1980, Ser. No. 158,108
Int. Cl.³ H02H *7/085*
U.S. Cl. 361—31 7 Claims



1. Apparatus for monitoring the current flow in a high voltage electrical load, such as a motor or transformer, comprising,

a high voltage section including a Faraday rotator optical sensor means for generating an optical signal indicative of the current flow in a high voltage electrical load,

a low voltage section including a signal processing circuit means,

first optical coupling means connected between said high voltage section and said low voltage section to optically transmit said optical signal from said Faraday rotator optical sensor means to said signal processing circuit means, said optical coupling means providing electrical isolation and noise immunity for said low voltage section,

said signal processing circuit means including first circuit means for converting said optical signal to an electrical signal manifesting the positive and negative half cycles of the current flow in said high voltage electrical load, second circuit means for comparing the positive half cycles of said electrical signal to a predetermined threshold, and the negative half cycles of said electrical signal to a second predetermined threshold and generating electrical overload output signals in the event the half cycles of said electrical signal exceed said respective thresholds, said third circuit means for converting said electrical overload output signal into an optical overload output signal.

4,363,062

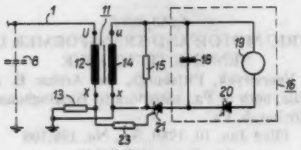
INDUCTIVE VOLTAGE TRANSFORMER AND CIRCUIT THEREFOR

Klaus Bollmann; Hans-Joachim Freygang; Jürgen Moeller, and Manfred Weniger, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 29, 1981, Ser. No. 268,162
Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3021002
Int. Cl.³ H02H *7/04*
U.S. Cl. 361—35 16 Claims

1. Apparatus for connection to an inductive voltage transformer having a primary winding connected directly to a

network line and at least one secondary winding connected a load, the apparatus comprising control means connected to the transformer primary, switching means connected to the control means, and means for generating current, the control means controlling switching of the switching means, the switching means coupling the current generating means to a secondary winding of the voltage transformer, the switching



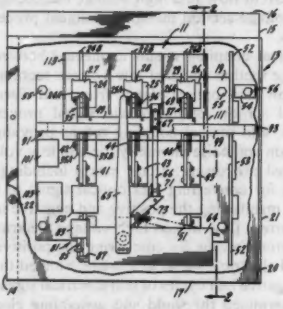
means providing a low impedance between the transformer secondary and the current generating means responsive to the control means, whereby current fed to the transformer secondary from the current generating means causes an excitation opposed to the excitation caused by the discharge of a capacitance associated with the network line through the transformer primary winding.

4,363,063

LOAD BREAK SWITCH WITH BUILT-IN GROUND FAULT SENSING

John W. Erickson, Crystal Lake, Ill., assignor to Boltswitch, Inc., Crystal Lake, Ill.

Filed Aug. 5, 1981, Ser. No. 290,370
Int. Cl.³ H02H *3/28*
U.S. Cl. 361—48 **3 Claims**



1. A plural phase high current low voltage load break switch comprising:

an insulator base;

a plurality of individual phase circuits mounted on and extending across the base, in parallel spaced relation to each other, each phase circuit including in series an input connector, a fixed switch contact, a movable switch contact, a fuse, and an output connector;

a neutral conductor mounted on and extending across the base in parallel spaced relation to the phase circuits;

a switch operator mechanism, mounted on the base and connected to all of the movable switch contacts, for opening and closing such contacts simultaneously, the switch operator mechanism including an electrically operated trip actuator for actuating the operator mechanism to open the switch contacts;

a zero sequence ground fault sensor coil disposed in encompassing relation to all of the phase circuits and the neutral conductor, the ground fault sensor coil being aligned with and encompassing the portions of the phase circuits comprising the movable contacts of the switch; and

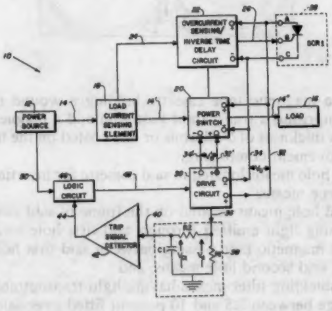
a control relay, electrically connected to the ground fault sensor coil and to the trip actuator, for energizing the trip actuator in response to the sensing of a ground fault condition by the sensor coil.

4,363,064

OVERCURRENT PROTECTION SYSTEM

William W. Billings; James T. Mitchell, both of Lima, and Richard E. Luebrecht, Wapakoneta, all of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 287,005
Int. Cl.³ H02H *3/08, 7/20*
U.S. Cl. 361—57 **6 Claims**



1. An improved overcurrent protection system having a power source of single or multi-phase ac, or dc, a load current sensing element for generating an overcurrent sensing voltage that is proportional to a load voltage across a load, a power switch for controlling the flow of load current, via a load current line connected to the load, an overcurrent sensing/inverse time delay circuit for sensing the overcurrent sensing voltage to generate an overcurrent fault signal in response to an overload condition, the overcurrent fault signal being generated sooner for heavier overloads and later for lighter overloads, and a logic circuit operative, under a normal load condition, to generate an input drive voltage at a drive circuit input line and under an overload condition, and in response to an overcurrent trip signal at its input, said logic circuit operates to turn-off the input drive voltage, wherein the improvement comprises:

a drive circuit operatively connected at its input, via the drive circuit input line, to said logic circuit, operatively connected at a first output to said power switch and said overcurrent sensing/inverse time delay circuit, and operatively connected at a second output to said power switch, said drive circuit operating on the input drive voltage at its input to generate first and second drive voltages at the first and second outputs thereof;

a drive circuit input current sensor operatively connected at its input to a third output of said drive circuit for generating a filtered voltage at its output that is proportionate to the voltage at its input;

a trip signal detector operatively connected in its input to the output of said drive circuit input current sensor, and operatively connected at its output to the input of said logic circuit; and

a crowbar circuit operatively connected to said overcurrent sensing/inverse time delay circuit, said power switch and said drive circuit, such that when the overload condition occurs, the corresponding increase in the overcurrent sensing voltage causes said overcurrent sensing/inverse time delay circuit at the appropriate time to generate the

overcurrent fault signal causing said crowbar circuit to conduct, thereby causing the crowbarring of the first drive voltage across the first output of said drive circuit which causes said overcurrent sensing/inverse time delay circuit to turn-off, and due to the shorting of the first output of said drive circuit, a consequentual increase in the voltage at the input of said drive voltage input current sensor, this increase affecting a subsequent increase in the output voltage of said drive circuit input current sensor, as applied to the input of said trip signal detector, which generates an overcurrent trip signal at its output when the voltage at its input exceeds a threshold level, thereby causing said logic circuit to remove the input drive voltage to said drive circuit causing it to deactivate.

4,363,065

INTERPHASE UNBALANCE DETECTOR FOR AC LOAD CIRCUIT

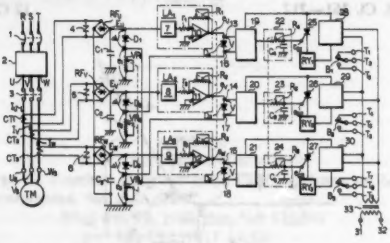
Uohiko Hasegawa, 1-2, Torimi-cho 4-chome, Nara-shi, Nara 631; Yasuo Fujii, 1-20, Kunimi-cho 2-chome, Saidaiji, Nara-shi, Nara 631, and Tahachi Murakami, 880-7, Shichijo Nishimachi, Nara-shi, Nara 630, all of Japan

PCT No. PCT/JP79/00027, § 371 Date Oct. 8, 1980, § 102(e) Date Sep. 25, 1980, PCT Pub. No. WO80/01742, PCT Pub. Date Aug. 21, 1980

PCT Filed Feb. 8, 1979, Ser. No. 227,044

Int. Cl.³ H02H *3/26*

U.S. Cl. 361—85 5 Claims



1. A detector for detecting an interphase unbalance in a polyphase AC load circuit, including convertors for converting alternating current in respective phases of said polyphase AC load circuit into a DC voltage, and comparing-detecting means for comparing the DC voltage of one phase with the DC voltage of another phase and for detecting a deviation of the two voltages, the current of each phase being used to detect the unbalance of currents in the respective phases at an arbitrarily adjustable predetermined unbalance factor, said comparing-detecting means comprising a dividing circuit having a forward constant-voltage element and a passive voltage varying element, said DC voltage being applied to the respective elements, the voltage at the passive voltage varying element being defined as current comparison voltage; a level adjusting circuit which reduces the voltage to reference level voltage; and a second constant-voltage element having the current comparison voltage and the reference level voltage being applied to the positive and negative terminals thereof.

4,363,066

PROTECTIVE RELAY

Martin T. Bishop, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1981, Ser. No. 245,788

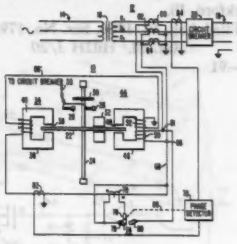
Int. Cl.³ H02H *3/26*

U.S. Cl. 361—85 6 Claims

1. A relay for detecting open phases and phase-to-ground faults in a three-phase electrical power system, including high impedance phase-to-ground faults, comprising:

first means providing a first signal responsive to the zero sequence current flowing in the three-phase electrical power system,

second means providing a second signal responsive to a phase current with said second means including means responsive to a phase-to-ground fault in said three-phase electrical power system for maintaining the magnitude of said second signal at substantially the same magnitude following said fault as it had prior to said fault,



third means providing a restraining quantity which varies as a function of the second signal less the first signal,

fourth means providing an operating quantity which varies as a function of the first signal,

and translating means responsive to said restraining and operating quantities for providing a predetermined signal when said restraining and operating quantities have a predetermined relationship.

4,363,067

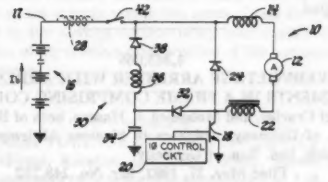
TRANSISTOR CHOPPER PROTECTION CIRCUIT

Thomas A. Radomski, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 9, 1980, Ser. No. 157,821

Int. Cl.³ H02H *7/20*

U.S. Cl. 361—91 4 Claims



1. A chopper circuit comprising in combination:

a transistor, an electrical load and a source of direct voltage connected in series;

means connected to said transistor for biasing it conductive and nonconductive to connect and disconnect said source and said load;

a series circuit comprising a capacitor and a diode connected in parallel with the emitter-collector circuit of said transistor, said diode being connected to a junction between said transistor and said load to establish a charging path for said capacitor, said charging path comprising said source of direct voltage, said diode and said electrical load, whereby upon biasing said transistor nonconductive, said capacitor absorbs inductive energy stored in said chopper circuit to protect said transistor from transient inductive voltage surges;

a return circuit including an inductor having inductance substantially in excess of stray circuit inductance connected between said source of direct voltage and a junction between said diode and said capacitor for returning

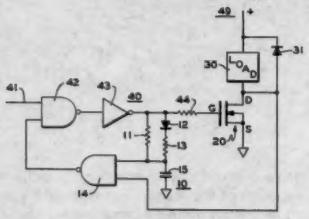
energy stored in said capacitor to said source of direct voltage when said transistor is biased nonconductive and to said electrical load when said transistor is subsequently biased conductive, said inductor being operative to dampen the current of the return energy.

4,363,068

POWER FET SHORT CIRCUIT PROTECTION

Dennis A. Burns, Ramsey, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 18, 1980, Ser. No. 179,347
Int. Cl.[3] H02H 3/20
U.S. Cl. 361—91 8 Claims



1. A protection circuit for a field effect transistor comprising:

a field effect transistor having a gate and a drain-source circuit;

drain-source connecting means for connecting said drain-source circuit to a load and a source of voltage;

switch means having first and second inputs and output means, said first input receiving a command signal for energizing said field effect transistor;

gate connecting means connecting said output of said switch means to said gate of said field effect transistor; and,

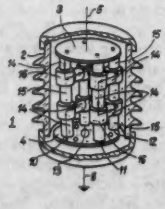
oscillator means connected to said drain-source circuit and to said second input of said switch means for cyclically operating said field effect transistor when both the voltage on said drain-source circuit exceeds a predetermined value and said field effect transistor receives said command signal.

4,363,069

OVERVOLTAGE ARRESTER WITH ARRESTER ELEMENTS IN A FRAME COMPRISING COLUMNS

Michael Crucius, and Mohamed A. Hassan, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,232
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012744
Int. Cl.[3] H02H 9/06
U.S. Cl. 361—130 13 Claims



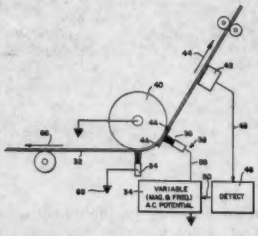
1. An overvoltage arrester comprising a plurality of arrester elements, a plurality of insulating elements and a plurality of conducting elements arranged to form a plurality of columns interconnected by arrester elements, each column comprising at least two spaced conducting frame elements and at least one additional element axially interposed between two conducting frame elements of the column, selected adjacent columns being interconnected by an arrester element which is interposed between respective conducting frame elements of the selected adjacent columns and which lies in a plane extending at about a right angle between adjacent columns, each said conducting frame element including means for connecting a said additional element thereto axially of a respective column and an arrester element thereto which is disposed in a respective said plane, there being a plurality of arrester elements per plane and one more conducting frame element per plane than the number of arrester elements per plane, each said additional element being one of an arrester element, an insulating element and a conducting support element, said insulating elements, conducting elements, and arrester elements being interconnected to provide a current path from an input to an output of said overvoltage arrester through said arrester elements.

4,363,070

NEUTRALIZATION OF ELECTROSTATIC CHARGES

Semyon Kisler, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1980, Ser. No. 183,323
Int. Cl.[3] H05F 3/00
U.S. Cl. 361—212 12 Claims



1. Apparatus for uniformly neutralizing positive and negative electrostatic charges on charge-retaining materials, comprising:

a first common electrical conductor;

means for establishing an electrically conductive reference surface;

a first multiplicity of at least slightly electrically conductive elongated bristles supported over said reference surface with one end of said bristles being in an electrically coupled relation to said first common conductor, said bristles extending from their said one end toward said reference surface with the free ends of said filaments being adjacent said reference surface and with the positional relationship of said free ends approximating a row and column grid-like pattern; and

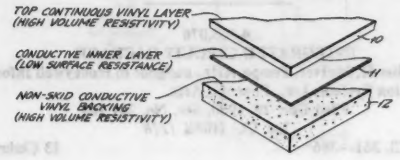
an AC potential source connected between said common electrical conductor and said reference surface, said potential source having a predetermined magnitude and frequency for establishing an alternating electrostatic field for neutralizing positive and negative electrostatic charges on charge-retaining material passed between said free bristle ends and said reference surface such that said material is supported by said reference surface and is spaced a finite distance from said free bristle ends, said predetermined potential magnitude being less than that required for the generation of corona.

4,363,071

STATIC DISSIPATIVE MAT

Ray M. Rzepecki, North Scituate, R.I., and Victor H. Weiss, Bridgeport, Conn., assignors to Pervel Industries, Inc., Plainfield, Conn.

Filed Mar. 16, 1981, Ser. No. 243,776
Int. Cl.³ B32B 5/18
U.S. Cl. 361—220 8 Claims



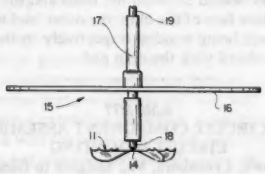
1. A three-ply conductive web for dissipating a static electric charge impressed thereon, comprising an upper layer of thermoplastic polymeric material having a volume resistivity of 1×10^7 to 1×10^{12} ohm-cm, a thin conductive film of thermoplastic polymeric material laminated directly to said upper layer and having a surface resistance in the order of 10^2 ohms per square, and a conductive underlying lower layer of expanded thermoplastic polymeric material in direct electrical contact with said conductive film and having a volume resistivity of 1×10^7 to 1×10^{12} ohm-cm.

4,363,072

ION EMITTER-INDICATOR

George G. Coggins, Redwood City, Calif., assignor to ZeCo, Incorporated, San Jose, Calif.

Filed Jul. 22, 1980, Ser. No. 170,844
Int. Cl.³ H01T 19/04
U.S. Cl. 361—231 4 Claims



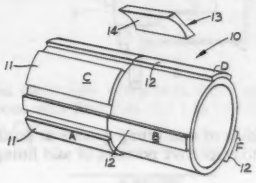
1. An emitter for negative ion generators, of light, thin, electrically conductive material, adapted with a center hub or indentation to rest upon a pin supplying said emitter with electric potential from an ionizer power supply, said emitter being in a symmetrically balanced form disposing a plurality of projecting members, each of which said projecting members provides on one edge at or near its end at least one sharp point, which said sharp points act as discharge elements for the emission of electrons and are so disposed as to cooperate in cumulating the effect of the forces produced from the reaction of said emitted electrons with the surrounding air molecules to produce ions, said reactive forces causing said emitter to revolve; further providing said projecting members are so shaped as to act as a fan and induce airflow from the revolution of said emitter to aid in propagation of the ions produced from the emission of said electrons.

4,363,073

VARIABLE CAPACITOR TRANSDUCER

Brian W. Tumber, Greenford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 17, 1980, Ser. No. 217,467
Claims priority, application United Kingdom, Jan. 19, 1980, 8001837
Int. Cl.³ H01G 5/12
U.S. Cl. 361—292 3 Claims



1. A transducer for providing signals representative of the axial setting of an angularly movable component comprising a generally cylindrical member coupled in use, to said component so as to be axially and angularly movable therewith, a plurality of circumferentially spaced zones on the periphery of said member, said zones being defined by raised portions of substantially equal circumferential length on the surface of said member and being equiangular spaced, the zones extending from one end of the member and terminating in a generally radial plane disposed between the ends of the member, a sensing device having a sensing surface presented to but spaced from the surface of the member, the sensing surface having a fixed area and the sensing device having a fixed axial position, the sensing surface being responsive to the nature of said zones whereby the sensing device provides a fluctuating electrical signal indicative of the areas of said zones which pass beneath the sensing surface, and hence the relative axial position of the member and the sensing device, and further zones defined by raised portions on the surface of said member located between said first mentioned zones respectively and having differing circumferential lengths, said further zones each having areas presented to the sensing surfae, the areas of said further zones presented to the sensing surface being substantially constant irrespective of the relative axial position of the component and sensing device.

4,363,074

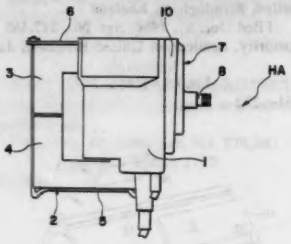
HIGH VOLTAGE GENERATING DEVICE

Toshimi Miyagi, Kusatsu, and Saburo Kitao, Kyoto, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 5, 1981, Ser. No. 240,957
Claims priority, application Japan, Mar. 7, 1980, 55/30443[U]; Aug. 9, 1980, 55/109635; Aug. 9, 1980, 55/109636
Int. Cl.³ H05K 5/00
U.S. Cl. 361—331 9 Claims

1. A high voltage generating device which comprises a first casing open at one side face thereof and accommodating therein high voltage electrical components, a second casing which is mounted in a cut-out portion formed in a side wall of said first casing and open at one edge thereof, and an electrically insulating material filled in a space within said first casing, said first casing being provided, along its entire peripheral wall adjacent to said cut-out portion thereof, with a fitting groove extending from said one open side face towards the bottom portion of said first casing and tapered so as to be narrowed at the side of said bottom portion, said second casing being formed with a wire-like protrusion provided adjacent to the peripheral edges thereof on its one surface in a position corresponding to one side face of said cut-out portion defining said fitting groove of said first casing, said peripheral edges of

said second casing which include said wire-like protrusion being arranged, in thickness thereof, to be larger to a certain



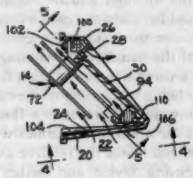
extent, than widths of said fitting groove at portions thereof corresponding to respective portions of said fitting groove.

4,363,075

VENTILATED ELECTRONIC APPARATUS FOR HEATED APPLIANCES

Harold A. DeRemer, Allentown, Pa., assignor to General Electric Company, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,441
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—383 **12 Claims**



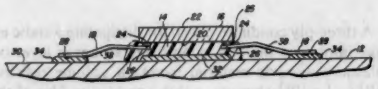
1. In an apparatus having a source of substantial heat, electronic apparatus and a ventilated housing therefor comprising:
- a first housing wall portion having inlet opening means therein through which ventilating air may be admitted,
- a second housing wall portion having outlet opening means therein through which ventilating air may be discharged,
- an electronic assembly comprising a plurality of parallel spaced-apart plates of which at least one of each adjacent pair of plates has electronic circuitry mounted thereon, said electronic assembly comprising:
  - a first plate,
  - a second plate spaced from and substantially parallel to said first plate,
  - a third plate spaced from and substantially parallel to said second plate on the side of said second plate opposite said first plate,
  - a plurality of first support elements interposed between said first and second plates in abutment therewith to establish the spacing between said first and second plates,
  - a plurality of second support elements interposed between said second and third plates in abutment therewith to establish the spacing between said second and third plates, each of said second support elements being aligned with a respective one of said first support elements,
  - and a plurality of securing means each associated with and extending through at least a portion of a respective pair of said first and second support elements to interconnect said first, second and third plates into an integrated assembly,
- and mounting means for mounting said electronic assembly intermediate said inlet opening means and said outlet opening means such that electronic circuitry mounted on said plates may be cooled by air flowing between said parallel plates from said inlet opening means to said outlet opening means,
- the size and configuration of said inlet and outlet opening means and the spacing between adjacent plates being sufficient for the flow of adequate ventilating air for the cooling of electronic circuitry mounted on said plates.

4,363,076

INTEGRATED CIRCUIT PACKAGE

Chandler H. McIver, Tempe, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 29, 1980, Ser. No. 221,103
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—386 **13 Claims**



1. The combination comprising:
- an integrated circuit chip having an active face having outer edges, a back face, and a plurality of input/output terminals on the active face;
- a plurality of flexible beam leads, each lead having an inner and an outer lead bonding site, the inner lead bonding site of each lead being bonded to an input/output terminal on the integrated circuit chip;
- a substrate having a top surface, a chip pad formed on said top surface, and a plurality of outer lead pads associated with said chip pad;
- a preform comprised of a segment of a web coated with an electrically insulating thermally conductive thermosetting plastic material, said preform substantially covering said chip pad; and
- said integrated circuit chip being mounted on said preform with its active face and the portions of the leads proximate the input/output terminals of the chip being encapsulated in the plastic material of said preform, said plastic material also being located between the leads and the outer edges of the active face of the chip, the outer lead bonding sites of the leads being bonded respectively to the outer lead pads associated with the chip pad.

4,363,077

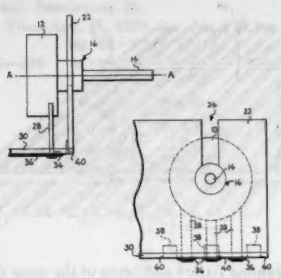
ROTARY CIRCUIT COMPONENT ASSEMBLY AND CIRCUIT MOUNTING

Robert E. Brown, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Mar. 16, 1981, Ser. No. 244,304
Int. Cl.³ H05K *7/02*; H01H *21/00*
U.S. Cl. 361—400 **6 Claims**

1. A rotary circuit component assembly in which the rotary circuit component is secured and locked in position, comprising:
- a. a rotary circuit component including:
  1. a body which houses the component elements that determine the characteristics of said component;
  2. a shaft defining a rotational axis of said rotary circuit component, and rotatably mounted to said body to engage said elements in said body for the purpose of altering the characteristics of said component; and
  3. a cylindrical bushing positioned around said shaft and attached to said body, said cylindrical bushing having a slot defined therein;
- b. a mounting structure including a notch which is dimensionally compatible with said slot, for receiving said cylin-

drical bushing at said slot such that said slot and notch are aligned; and



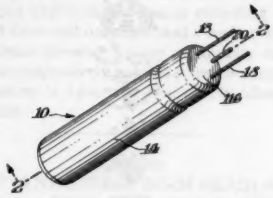
c. fastening means for securing and locking said rotary circuit to a circuit board having slits therein.

4,363,078

MINIATURE ELECTROLYTIC CAPACITOR WITH ANCHORING TERMINAL

James F. Dwyer, Hillsville, Va., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 17, 1980, Ser. No. 141,240
Int. Cl.[3] H01G 9/00
U.S. Cl. 361—433 4 Claims



1. A miniature electrolytic capacitor having a capacitor section housing in a can, wherein the improvement comprises the open end of said can being closed by an elastomer seal, said seal being held under compression within said open end by a circumferential groove in said can, at least one electrical lead from said capacitor section passing through said seal, and an anchor terminal being secured in said seal with one end of said anchor terminal extending outwardly from the outer surface of said seal and with the other end of said anchor terminal beyond said groove and stopping short of the inner surface of said seal.

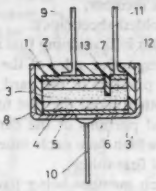
4,363,079

SOLID STATE DOUBLE LAYER CAPACITOR

Satoshi Sekido, Yawata, and Yoshito Ninomiya, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 105,855, Dec. 20, 1979, abandoned.
This application Jun. 23, 1981, Ser. No. 276,693
Claims priority, application Japan, Dec. 29, 1978, 53-165706; Apr. 5, 1979, 54-41382; May 25, 1979, 54-65366
Int. Cl.[3] H01G 9/00; B01J 17/00
U.S. Cl. 361—433 18 Claims

1. A solid state double layer capacitor comprising:
a polarization electrode,
a counter electrode, and
a solid electrolyte disposed at least between said polarization electrode and said counter electrode,
said polarization electrode and said counter electrode comprising a mixture of cuprous sulfide and said solid electrolyte,



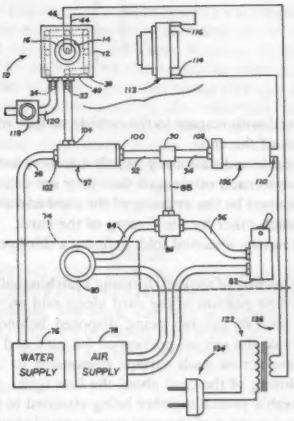
said solid electrolyte comprising CuCl substituted 1/5 of Cu^+ ions with Rb^+ ions and $\frac{1}{4}$ to $\frac{1}{3}$ of Cl^- ions with I^- ions in CuCl.

4,363,080

WATER-COOLED LIGHT SOURCE

Donald D. Sylvester, Tigard, Oreg., assignor to Dentek Systems, Inc., Tigard, Oreg.

Filed Sep. 2, 1980, Ser. No. 182,975
Int. Cl.[3] F21V 7/04
U.S. Cl. 362—32 5 Claims



1. Cooling apparatus for a light source which supplies light to an optical fiber, said apparatus comprising
a heat-conductive heat sink body having means defining a cavity extending thereinto from a side of said body for receiving such a light source, means defining a duct extending into said body from another side of said body for permitting access of such a fiber to the source, and means defining a fluid coolant passage extending through said heat sink body; and
a source of fluid coolant operatively connected to said passage for providing a flow of fluid coolant through said passage which operates to conduct heat away from the heat sink body.

4,363,081

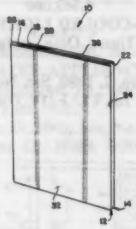
ILLUMINATED GREETING CARDS

Robert W. Wilbur, 30 N. Byron Ave., Brockton, Mass. 02401

Filed Jul. 2, 1980, Ser. No. 164,505
Int. Cl.[3] B42D 15/04; G09F 1/04
U.S. Cl. 362—98 10 Claims

1. An illuminated card comprising:
a lamp for providing illumination;

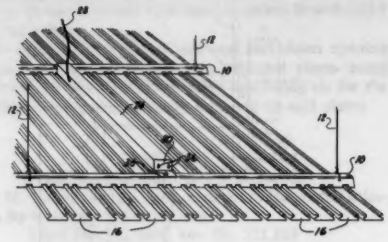
a substantially flat battery for energizing the lamp;
a slide switch for closing a circuit to illuminate the lamp, the slide switch comprising a first, stationary member and a second moveable member;
a card formed of folded sheet stock;
the card having a first fold, defining first and second portions of the card on respective sides of the fold, such that the first and second portions of the card are hingeably connected to each other about the first fold;
the first and second portions of the card having first (i.e., inside) surfaces which face each other when the card is closed about said first fold;
the moveable switch member being fixed to the first card portion, so that the moveable switch member is translated across the second (i.e., outside) surface of the second portion of the card responsive to motion of the first card portion;
the stationary switch member also being disposed adjacent



and fixed with respect to the outside surface of the second portion of the card;
the moveable and stationary switch members being disposed relative to each other such that they are caused to come into contact by the opening of the card and are separated from each other by the closing of the card;
the card having a second fold, defining a third portion of the card;
the third portion of the card forming a tab hingeably attached to the first portion of the card along said second fold;
at least part of the tab being disposed behind the inside surface of the second portion of the card and confined to translate across such surface responsive to the opening and closing of the card about the first fold;
the moveable switch member being attached to the tab; and
the second portion of the card being provided with an aperture and the lamp being positioned behind such aperture, whereby the illumination of the lamp may be viewed there through when the card is opened.

4,363,082
PANEL CEILING AND LIGHT FIXTURE
George R. Roland, Paramus, N.J., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.
Filed Aug. 26, 1980, Ser. No. 181,740
Int. Cl.³ F21S 1/14
U.S. Cl. 362—148 **7 Claims**

1. In a suspended ceiling: channel means suspended from a support, a plurality of elongated ceiling panels arranged parallel to each other and supported by said channel means essentially perpendicular thereto in an essentially horizontal plane, at least one lighting fixture including fluorescent tube means housed in a box-shaped housing, and lens means arranged



below said lighting fixture and being of the same shape as said ceiling panels so as to fully blend therewith.

4,363,083
SCREW-BASED INCANDESCENT LAMP TYPE FLUORESCENT LAMP
Masashi Tanaka; Nobuhiro Fujii, and Yashuharu Takano, all of Yokohama, Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan
Filed Sep. 2, 1980, Ser. No. 183,282
Claims priority, application Japan, Sep. 4, 1979, 54/113320
Int. Cl.³ F21S 13/00
U.S. Cl. 362—216 **9 Claims**

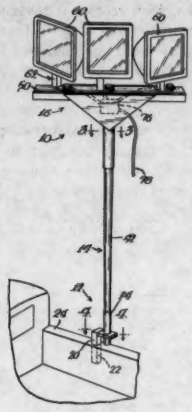
1. A screw-based incandescent lamp type fluorescent lamp comprising:
a luminous tube bent to define a vacant space therein;
an operating member including a ballast for said tube, the ballast disposed in said vacant space;
a holder having an opening facing said ballast at a given distance therefrom and holding said tube and ballast;
a base body supporting said holder and having a flange section in which a plurality of upper ventilation holes are formed;
a light transmitting bottom envelope having an end edge attached to the peripheral edge of the flange section of said base body and surrounding said tube, at least one lower ventilation opening with an opening area larger than 0.2826 cm^2 and smaller than the total area of said upper ventilation holes being formed in the bottom of said envelope; and
a screw base disposed on the top portion of said base body and electrically connected with said tube and said operating member,
whereby air introduced from said lower ventilation opening into said light transmitting bottom envelope will flow along the outer peripheral surfaces of said ballast and said tube and be discharged from said upper ventilation holes to the outside via the opening of said holder.

4,363,084

PORTABLE LIGHTING SYSTEM

Michael A. Dimiceli, Kane, Ill., assignor to Allison Manufacturing Company, Barrington, Ill.

Filed Aug. 18, 1980, Ser. No. 179,266
Int. Cl.³ F21V 21/14
U.S. Cl. 362—250 11 Claims



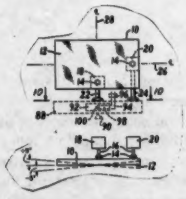
1. A portable lighting system comprising a bar having a plurality of directional floodlights thereon, a socket on said bar having an open end with pin means extending across said socket spaced from said open end, and a support including an elongated tubular member having a plurality of angularly related recesses respectively adapted to receive said pin means to support said bar in a plurality of angularly related positions on said support.

4,363,085

SCAN SYNTHESIZED BEAM HEADLAMP

Nickolas P. Demas, Cranford, N.J., assignor to Edison International, Inc., Rolling Meadows, Ill.

Filed May 5, 1980, Ser. No. 146,683
Int. Cl.³ F21V 7/00
U.S. Cl. 362—283 15 Claims



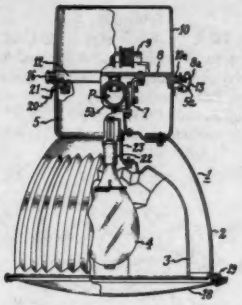
1. A vehicle headlamp comprising a housing, means for generating a collimated beam of light in said housing, light reflective means mounted for predetermined oscillating movement, said light reflective means intercepting and scanning said collimated beam of light in said housing to project an apparently continuous beam of light from said housing, first means coupled to said light reflective scanning means and mounted for oscillating said light reflective scanning means about a first axis and second means coupled to said light reflective scanning means and mounted for oscillating said light reflective scanning means about a second axis positioned at a predetermined angle with respect to said first axis, said first and second oscillating means controlling the dimensions of said resulting continuous beam of light.

4,363,086

LUMINAIRE

Thomas A. Fletcher, Dana, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 5, 1977, Ser. No. 839,550
Int. Cl.³ B60Q 1/00
U.S. Cl. 362—368 9 Claims



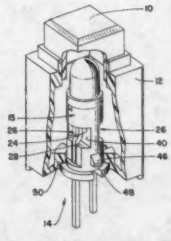
1. A luminaire comprising, in combination, an upper housing having an open bottom, mounting plate means arranged closing the open bottom of said upper housing and adapted to have electrical operating components mounted on the upper side thereof and covered by said upper housing, slipfitter means secured to the underside of said mounting plate means, combined slipfitter housing and optical means arranged below said mounting plate means covering the underside thereof and forming with said mounting plate means and said upper housing an annular joint therebetween, and readily detachable attaching means surrounding said annular joint and holding said upper housing, said mounting plate means and said combined slipfitter housing and optical means in assembly.

4,363,087

MOUNTING POST FOR HOLDING A LIGHTED ELECTRICAL PUSHBUTTON SWITCH

Bruce L. Graham, Wheeling, and Iran R. Littman, Wheaton, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 22, 1981, Ser. No. 227,283
Int. Cl.³ F21V 17/00
U.S. Cl. 362—382 1 Claim



1. In a mounting post having a generally cylindrical base for supporting a light source for an electrical lighted pushbutton switch that has a pair of leads, wherein the leads of the light source pass through parallel passageways that run through said base from the top surface to the bottom surface of said base, the improvement comprising a pair of diametrically opposed cut-out sections, each of which receive one of said leads so as to expose a portion of said received lead in said section, said sections being located intermediate the ends of said base and comprising a rear wall which is recessed from the outer periph-

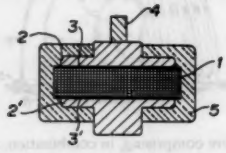
ery of said base and upper and lower walls which thereby divide said passageways into upper and lower segments on opposite sides of said cut-out sections and allowing said exposed portions of each of said leads to be inwardly crimped towards said rear wall of its respective cut-out sections so that said leads are securely locked into place in a said cut-out section between said upper and lower walls.

4,363,088

ELECTRIC POWER SOURCE UNITS

Hirotaka Yamamoto, Tokyo; Minoru Obara, Kawasaki, and Shinobu Fujiwara, Nikaho, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1981, Ser. No. 223,261
Claims priority, application Japan, Jan. 11, 1980, 55-1319
Int. Cl.³ H02M *3/18*
U.S. Cl. 363—59 **4 Claims**



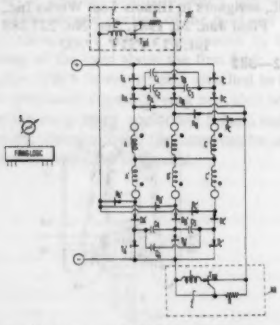
1. An electric power source unit having a high-speed pulse-forming circuit or a high-frequency voltage-multiplier rectifying circuit comprising at least two ceramic capacitors having a strontium titanate-based ceramic as the dielectric body.

4,363,089

INVERTER

Franklin D. Wisman, Chambersburg, Pa., assignor to T. B. Wood's Sons Company, Chambersburg, Pa.

Continuation-in-part of Ser. No. 93,559, Nov. 13, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,399
Int. Cl.³ H02M *7/515*
U.S. Cl. 363—137 **8 Claims**



1. An inverter for converting DC available between a pair of terminals to three-phase AC of controllable frequency comprising:

first and second groups of complementary load windings,

first and second groups of thyristors, each associated with a different load winding,

means for gating said thyristors in a predetermined sequence and at a controllable frequency,

first and second groups of isolation diodes, one isolation diode for each load winding, isolation diodes of a first group connecting cathodes of first group thyristors to an associated load winding and isolation diodes of said second group connecting anodes of second group thyristors to an associated load winding,

means coupling anode-cathode circuits of all said thyristors to one or another of said terminals, said means coupling anodes of first group thyristors to one of said terminal and second group cathodes to another said terminal,

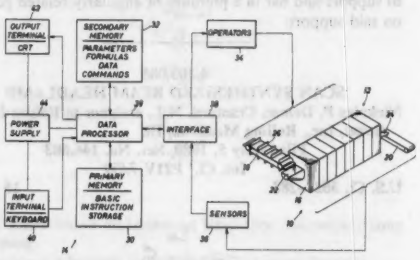
recovery diode means including first and second groups of recovery diodes, each recovery diode associated with a different load winding and coupled therewith for clamping energy represented by collapsing leakage flux in a winding during commutation to one or another of said terminals, said recovery diode means including a pair of expander circuits, one associated with each said terminal, each expander circuit coupled between said associated terminal and the terminal common to a group of said recovery diodes for inhibiting clamping until a predetermined voltage level is attained.

4,363,090

PROCESS CONTROL METHOD AND APPARATUS

Daniel P. Garcia, Jefferson, La., assignor to Pellerin Milnor Corporation, Kenner, La.

Filed Aug. 1, 1980, Ser. No. 174,594
Int. Cl.³ G05B *19/04*; D06F *21/04*
U.S. Cl. 364—139 **19 Claims**



1. A method of operating a multi-stage batch processing system comprising the following steps:

a. providing a programmable controller, having an accessible memory and being linked to the batch processing system for transmitting operational instructions thereto;

b. providing to said memory at least one formula for operating the processing system by the controller;

c. identifying a batch of goods to be processed according to one such formula;

d. entering the batch of goods in the first stage of the processing system;

e. noting the requirements of the selected formula for the first stage and, by the controller, carrying out those requirements;

f. transferring the batch of goods to the next stage;

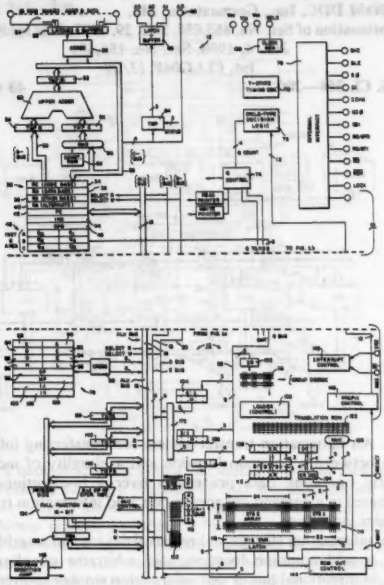
g. noting the requirements of the selected formula for said next stage and, by the controller, carrying out those requirements; and

h. repeating steps f. and g. herein until the batch of goods has been processed according to the selected formula in all stages of the processing system as required.

4,363,091
EXTENDED ADDRESS, SINGLE AND MULTIPLE BIT MICROPROCESSOR

William B. Pohlman, III, Los Gatos; Bruce W. Ravenel, III, Sunnyvale; James F. McKevitt, III, San Jose, and Stephen P. Morse, San Francisco, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 31, 1978, Ser. No. 873,777
Int. Cl.³ G06F 7/50, 13/00
U.S. Cl. 364—200 26 Claims



1. An improvement for generating an address word for addressing an extended memory space, said improvement being in a data processing system including a memory unit for storing digital information and a processor unit, including an adder, for processing digital information communicated at least in part between said processor unit and said memory unit, said improvement comprising:

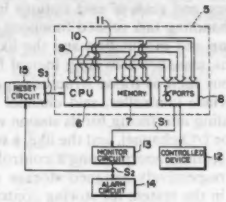
a plurality of registers in said processor unit, said registers for storing words of digital information, at least some of said registers being relocation registers and being selectively coupled by said processor unit to a first input of said adder, a selected one of another one of said plurality of registers being coupled by said processor unit to a second input of said adder such that a subset of bits of said word stored in said other selected register is numerically added by said adder to said word stored in said selected relocation register wherein the binary order of magnitude of said subset of bits is unequal to the binary order of magnitude of the bits of said word from said relocation register, the remaining bits of said word from said selected register being appended to the sum of said adder to result in an address word greater in bit length than the maximum bit length stored in said plurality of registers,

whereby said data processing system is afforded an extended memory space beyond the address word length limitation of said plurality of registers.

4,363,092
MALFUNCTION PREVENTING SYSTEM FOR A MICROCOMPUTER SYSTEM

Toshimi Abo, and Akio Hosaka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 12, 1979, Ser. No. 75,183
Claims priority, application Japan, Oct. 25, 1978, 53-130512
Int. Cl.³ G06F 11/14
U.S. Cl. 364—200 12 Claims



1. Apparatus for preventing certain malfunctions of a microcomputer that is normally periodically cycled through a program, the microcomputer including a reset and initialization input terminal, the apparatus comprising a reset circuit for normally applying a first voltage to the reset and initialization input terminal, the microcomputer responding to the first voltage at the reset and initialization input terminal to continuously recycle the program, means responsive to power being initially applied to the microcomputer and the reset circuit for activating the reset circuit so the reset circuit applies a second voltage to the reset input for a predetermined interval after power is initially applied to the microcomputer and reset circuit, the microcomputer responding to the second voltage to reset the program to a starting point and initialize parameters associated with the program, the predetermined interval being greater than a predetermined time required for the microcomputer to execute a program cycle plus the time required to reset and initialize the microcomputer, the microcomputer deriving a program run impulse in response to the microcomputer executing each program cycle, whereby the microcomputer while normally operating derives adjacent periodic program run impulses at intervals spaced from each other by a predetermined time, the predetermined time being less than the predetermined interval, and means connected to the microcomputer to be responsive to the program run impulses for supplying the second voltage to the reset and initialization input terminal in response to a pair of the impulses not occurring in a predetermined duration, the predetermined duration being greater than the predetermined time, whereby the program is immediately reset and initialized in response to the microcomputer not executing the program within the predetermined duration.

4,363,093
PROCESSOR INTERCOMMUNICATION SYSTEM

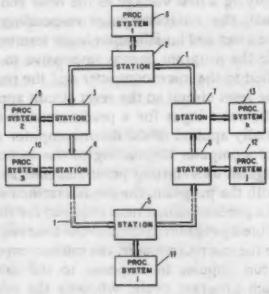
Michael I. Davis, Kingsworthy, near Winchester, England, and Daniel T. W. Sze, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,053
Int. Cl.³ G06F 15/16
U.S. Cl. 364—200 7 Claims

1. A processor intercommunication system for effecting information transfer among a plurality of processors, said system having a communications link with a plurality of station nodes, said processors each having at least one Input/Output I/O channel and said processors each periodically requiring exchanges of information such as control, data and status information with other processors in said system, such exchanges occurring by way of individual logical connections and transfer sessions between processors, the arrangement establishing

and maintaining a multiplicity of such logical connections or transfer sessions between individual stations and other stations, said system comprising:

a corresponding plurality of stations in said system, each of said stations being connected to a respective one of said station nodes for communication with any other station in said system by way of said communications link, each of said stations being attached to a respective one of said processors for controlling transfer of information such as said control, data, and status information between said processors over said communications link, such information being arranged in accordance with a variety of information frames, and each of said stations incorporating a modem for handling link related functions, such as information coding and modulation and the like, a link manager, said link manager providing logical frame management functions such as frame structuring, and the like, a channel interface controller, said channel interface controller providing interfacing for its station with its respective processor I/O channel, and the like, a storage section, said storage section incorporating a control storage array including a respectively assigned storage subsection for each station in the system for storing control information for the respective stations during transfer sessions, said storage section further incorporating a data storage array, including a respectively assigned storage subsection for each station in the system for storing data for the respective stations during transfer sessions, said storage section further incorporating a work queue storage array for storing work queues of pending task information during transfer sessions, and said arrays being commonly used by said link manager and said channel interface controller; and



logic means in said channel interface controller and said link manager at each station operable in an initiating mode in response to control signals from the respective processor for initiating a logical connection with another station via said communications link by way of a requesting control frame to establish a transfer session, any station taking the initiative to establish a particular transfer session, i.e., the station which first sends a control frame being designated the master station and said logic means at each station being further operable in a receiving mode responsive to a received requesting control frame addressed to it and a conditioning signal from its respective processor to complete the logical connection, the station which does not have the initiative for a particular session but which accepts the requesting control frame from the master station for that particular session being designated a slave station, said logic means at each station being further operable to establish logical connections from the respective station to other stations via said communications link wherein any of said respective stations can simultaneously serve as a master in one transfer session and a slave in another transfer session through utilization of said control storage array, said data storage array and said work queue in a multiplexed manner under joint control of said link manager and said channel interface controller to thereby establish and maintain the required logical connections during operation of said system, whereby a multiplicity of interconnected master and slave station connections may exist within said system for accomplishing a multiplicity of exchanges of information in said system.

4,363,094

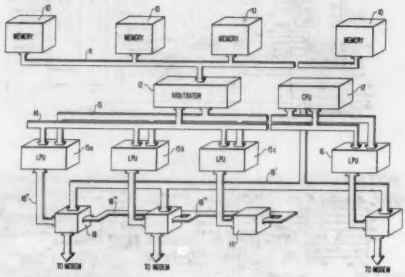
COMMUNICATIONS PROCESSOR

Pradeep Kaul; Daniel Wendling, both of Rockville; Harold Ford, Germantown; Deepak Muzamder, Gaithersburg, all of Md., and Christopher Newport, Annandale, Va., assignors to M/A-COM DDC, Inc., Germantown, Md.

Continuation of Ser. No. 865,655, Dec. 29, 1977. This application Jun. 4, 1980, Ser. No. 156,451

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **43 Claims**



1. An information transfer system for transferring information between a common location and a plurality of independently operating data processors over a bi-directional bus operated in a demand assigned mode, said information transfer system including:

an information storage and retrieval device and an arbitrator at said common location, said arbitrator coupling said bi-directional bus to said information storage and retrieval device,

said arbitrator including means for generating a control signal after all said independently operating processors, collectively, either has had, refused or does not require access, and also including clock means for generating a cyclic timing signal having two distinct portions,

a plurality of bus control means, each associated with a different one of said plurality of independently operating data processors, each said bus control means including a control signal input and a control signal output, each said bus control means enabling access to said bi-directional bus by the associated data processor only on receipt of said control signal or a replica thereof,

a clock bus coupled to said clock means for distributing said timing signal to a plurality of said bus control means,

control signal distributing means coupled to said means for generating a control signal for presenting said control signal to be effective at a control signal input of only one of said bus control means, and coupling a control signal output of each of a plurality of said bus control means to be effective at a control signal input of other of said bus control means,

each of said bus control means responsive to the receipt of a control signal or replica thereof at said control signal input for immediately coupling a replica of said control signal to the associated control signal output in the event access to said bus is not required,

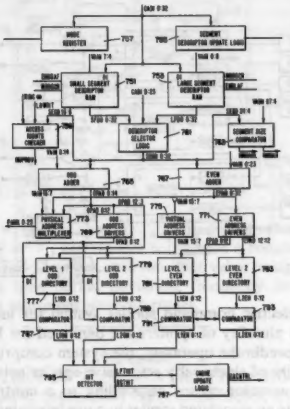
or if access to said bus is required, allowing access to said bi-directional bus subsequent to receipt of said control

signal or replica thereof and synchronous with said timing signal for one of said distinctive portions and simultaneously with the beginning of said one distinctive portion coupling a replica of said control signal to an associated control signal output.

4,363,095
HIT/MISS LOGIC FOR A CACHE MEMORY

William E. Woods, Natick, and Arthur Peters, Sudbury, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 31, 1980, Ser. No. 221,851
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 13 Claims



1. In a data processing system including a system memory for addressably storing a plurality of data words identified by a like plurality of associated odd and even address numbers, each address number including a first portion and a second portion, and wherein system elements generate requests for the transfer of a pair of data words identified by successive address numbers, a transfer request including a memory request address number identifying the first of the pair of data words requested, a cache memory for selectively storing a subset of the data words stored in the system memory and for supplying the requested data words in the place of the system memory if the requested data words are stored in the cache memory, the cache memory comprising:

memory means for storing said subset of said data words stored in said system memory, said memory means including an odd memory module for storing said data words identified by said odd address numbers and an even memory module for separately storing said data words identified by said even address numbers;

an odd directory memory for storing said address numbers identifying said data words stored in said odd memory modules;

an even directory memory for storing said address numbers identifying said data words stored in said even memory modules;

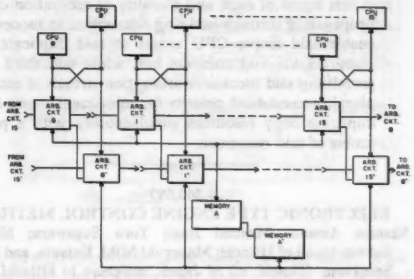
means for receiving each of said address numbers supplied by said system elements and for determining if said received memory request address number and the next successive address number are stored in said odd or even directory memories; and

hit detector circuit means coupled to said receiving and determining means for generating a full hit signal if both said supplied memory request address number and said next successive address number are determined to be stored in said odd and even directory memories, a partial hit signal if only one of said supplied memory request address number and said next successive address number are determined to be stored in said odd and even directory memories, and a no hit signal if neither said supplied memory request address number nor said next successive address numer are determined to be stored in said odd and even directory memories.

4,363,096
ARBITRATION CONTROLLER PROVIDING FOR ACCESS OF A COMMON RESOURCE BY A DUPLEX PLURALITY OF CENTRAL PROCESSING UNITS

Joseph A. Comfort; Thomas J. Perry, and Michel Loos, all of Phoeniz, Ariz., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 26, 1980, Ser. No. 163,044
Int. Cl.³ G06F *13/00, 15/16*
U.S. Cl. 364—200 8 Claims



1. An arbitration controller providing for equal priority sharing of duplicate copy resources by active ones of a plurality of duplicate pairs of CPUs, said arbitration controller comprising:

first and second means for initialization, each providing a first signal;

corresponding first and second pluralities of arbitration circuits, each plurality including a first, at least one successive and a last arbitration circuit;

each of said means for initialization connected to at least one of said corresponding plurality of arbitration circuits;

first and second pluralities of CPU buses each bus of each plurality connected between a particular CPU and said resources via a particular arbitration circuit on a one for one basis, each CPU bus including a control portion and an address/data portion;

each of said CPU buses of said first plurality connected to a particular one of said buses of said second plurality and each of said buses of said second plurality connected to a particular one of said buses of said first plurality;

first and second common buses, each common bus connected between said corresponding CPU and a particular one of said duplicate copies of said resource via said corresponding plurality of arbitration circuits for the parallel transmission of information between said duplicate common resources and any active one of said plurality of CPUs via said address/data portion of said corresponding CPU bus;

first and second pluralities of circuit connections, each plurality including a circuit connection between each first arbitration circuit and each successive arbitration circuit, said last arbitration circuit connected to said first arbitration circuit, thereby forming corresponding first and second completed ring connections, each of said ring connections propagating a corresponding one of said first signals through said first and second ring connections;

one arbitration circuit of each plurality connected to said control portion of said corresponding CPU bus and simultaneously operated in response to its respective first signal and to a common bus request signal from said active CPU,

each arbitration circuit producing a second signal for allowing said active CPU to access each of said duplicate copy resources simultaneously via said first and said second common buses respectively;

each said arbitration circuit of each said plurality including:

first gating means operated to propagate said first signal along said corresponding ring connection at a relatively high rate of speed;

latching means operated in response to said common bus request signal of said corresponding CPU to produce said second signal for allowing said CPU to access said duplicate resources via said common and CPU buses;

second gating means operated in response to said operated latching means and in response to aid propagated first signal to propagate a third signal from each arbitration circuit of each plurality to each successive arbitration circuit; and

said first signal of each said plurality of arbitration circuits propagating through said ring connection to successively enable said active CPU access to said duplicate copy resources via said common bus, while said third signal permitting said successive arbitration circuits of each said plurality to establish priority for subsequent access of said duplicate copy resources simultaneously with a present access of said resources.

4,363,097

ELECTRONIC TYPE ENGINE CONTROL METHOD

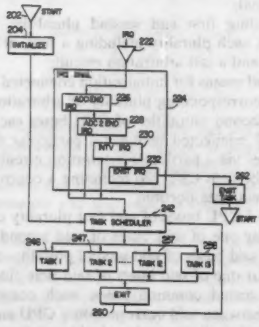
Matsuo Amano; Masumi Imai; Toru Sugawara; Shinichi Sakamoto, all of Hitachi; Masayuki Miki, Katsuta, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 138,086

Claims priority, application Japan, Apr. 6, 1979, 54-40934

Int. Cl.³ G05B *15/02*; G06F *9/46*; G11C *7/00*

U.S. Cl. 364—431.11 **71 Claims**



1. A method of electronically controlling the operation of an internal combustion engine provided with a control system which includes sensors for detecting operating conditions of said engine, an arithmetic unit for arithmetically determining control quantities for controlling said engine through the digital processing of output signals produced from said sensors, memory means for storing therein programs and data for performing said arithmetic operations, and control means for controlling said engine on the basis of the results of said arithmetic operations, wherein contents of said arithmetic operations are divided into a number of tasks in dependence on control functions to be performed, said method comprising:

a first step of setting the indication of an activation request for a given one of said tasks through the execution of another task;

a second step of setting the indication of an activation request for a task through the execution of said task itself;

a third step of searching the set of the activation request indications for the individual tasks; and

a fourth step of executing the tasks for which the activation requests are retrieved on the basis of the generation of the retrieved activation requests.

4,363,098

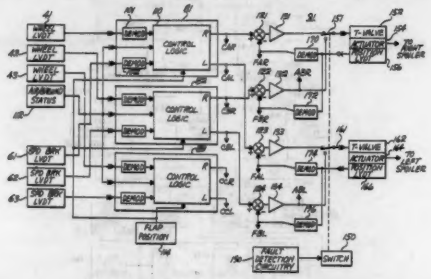
ELECTRIC COMMAND SPOILER SYSTEM

Henning Buus; Thomas D. MacFie, both of Woodinville, and Odd Justad, Issaquah, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 24, 1980, Ser. No. 162,458

Int. Cl.³ G05D *1/08*

U.S. Cl. 364—434 **7 Claims**



1. An electric command spoiler system for use in aircraft wherein a plurality of spoilers are deployed for both aircraft roll and speedbrake operation, the system comprising:

a plurality of electrically responsive spoiler actuator means, each actuator means responding to a control signal to actuate an associated spoiler to a predetermined deflection between its fully retracted and fully deployed positions;

roll command means for producing a roll command signal representative of commanded roll;

speedbrake command means for producing a speedbrake command signal representative of a commanded speedbrake condition;

flap position transducer means for producing a signal representative of the aircraft's flap position; and

logic control means responsive to said roll and speedbrake command signals and said flap position transducer produced signal for producing at least two unique predetermined actuator command signals, said logic control means including means for coupling each of said unique actuator command signals to at least a predetermined one of said spoiler actuators such that differing spoiler deflections are produced.

4,363,099

METHOD AND SYSTEM FOR MEASURING FREQUENCY DEVIATION OF LOW FREQUENCY SIGNALS

Krishnaswamy Srinivasan, and Chinh T. Nguyen, both of St. Bruno, Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Mar. 13, 1980, Ser. No. 129,756

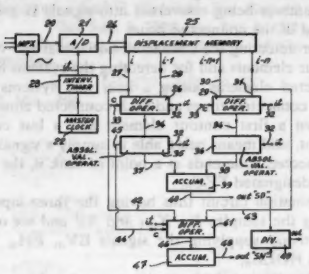
Int. Cl.³ G01K *23/00*

U.S. Cl. 364—484 **10 Claims**

4. A measuring system for measuring power system frequencies in the low frequency range of approximately 0 to 2 KHz, said system comprising an analog to digital converter circuit having an input for receiving a signal to be measured, a real time clock connected to said converter circuit to provide periodic impulses for sampling said periodic signal at precise intervals, said converter circuit providing output digital value signals at said precise intervals and derived from a periodic signal at its input, memory device for storing a predetermined

number of said digital values representative of the lapse time of at least a time period of said periodic signal, and operator system means for processing selected samples of said stored digital values to provide output numerator and denominator values expressed by the formula:

$$N=(V_{i-n}-V_i)\mathrm{Sgn}(V_{i-1}-V_i)$$



$$D=|V_{i-1}-V_i|+|V_{i-n+1}-V_{i-n}|,$$

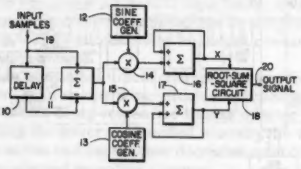
wherein V_i V_{i-1}, V_{i-n} and V_{i-n+1} are digital values and Sgn is the sign + or −, and divider to provide a resultant output from said N and D values, said resultant value being representative of the time period deviation, frequency deviation or frequency of said input periodic signal.

4,363,100

DETECTION OF TONES IN SAMPLED SIGNALS

David G. Agnew, Ottawa, and Sorin Cohn-Sfetcu, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 28, 1980, Ser. No. 201,503
Int. Cl.³ G06F *15/31*; H04M *1/50*
U.S. Cl. 364—484 **9 Claims**



1. A method of detecting the presence of a predetermined frequency component in a signal sampled with a sampling period t, each signal sample comprising a plurality of bits, the method comprising:

delaying the samples of said signal by a predetermined correlation period T to produce delayed signal samples;

producing samples with a sampling period t of first and second signal sequences representing respective signals at said predetermined frequency having a phase difference other than 0 or π, each sample of the first and second signal sequences comprising a plurality of bits;

cumulatively producing for each signal sample first and second accumulated signals, each of the first and second accumulated signals being equal to the first or second, respectively, accumulated signal produced for the previous signal sample modified in dependence upon the product of the current sample of the first or second, respectively, signal sequence with the difference between the current signal sample and the current delayed signal sample; and

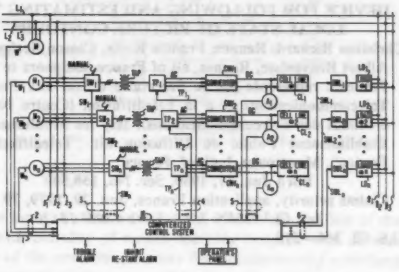
deriving from the first and second accumulated signals an output signal which represents the presence or absence of the predetermined frequency component during the preceding correlation period T.

4,363,101

COMPUTERIZED POWER DEMAND CONTROL IN AN ELECTROCHEMICAL PLANT

Francis R. Czerniejewski, Longwood, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1980, Ser. No. 144,149
Int. Cl.³ G05F *1/66*
U.S. Cl. 364—492 **14 Claims**



1. A method of controlling the loads in a plant facility while keeping the overall plant consumption within an assigned power demand limit, comprising the steps of:

measuring the actual power rate of consumption by said plant;

establishing successive demand periods for totalizing the power demand from the beginning of a demand period to the end thereof;

said power demand limit being assigned at the end of a demand period;

periodically calculating a demand error projected to be at the end of a demand period on the basis of actual power rate;

changing concurrently with said calculating step the demand error into a changed error by an amount sufficient to reach at a predetermined instant selected before the end of the demand period a power rate corresponding to the ideal rate of consumption at said predetermined instant; and

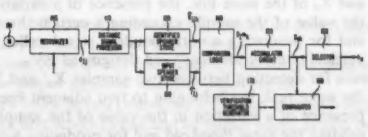
controlling at least one of said loads in order to compensate for such said changed error, thereby reaching said assigned demand limit under the ideal rate at the end of the demand period.

4,363,102

SPEAKER IDENTIFICATION SYSTEM USING WORD RECOGNITION TEMPLATES

John E. Holmgren, Lincroft; Aaron E. Rosenberg, Berkeley Heights, and John W. Upton, Chatham, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 27, 1981, Ser. No. 248,546
Int. Cl.³ G10L *1/00*
U.S. Cl. 364—513 **17 Claims**



1. A method for recognizing a speaker comprising the scope of storing a set of templates representative of the acoustic features of predetermined reference words; generating, for

each of a plurality of identified speakers, a set of first signals representative of the correspondence of the identified speaker's utterance of said reference words with said templates; generating a set of signals representative of the acoustic features of the utterance of an unknown speaker; recognizing the words of the unknown speaker's utterance from his utterance feature signals and said templates; generating a set of second signals representative of the correspondence of the feature signals of the recognized words of the unknown speaker to the feature signals of the templates; and identifying the unknown speaker responsive to the first signals for the recognized words of the identified speakers and the second signals.

4,363,103

DEVICE FOR FOLLOWING AND ESTIMATING THE LOCAL STATE OF PICTURE CONTOURS

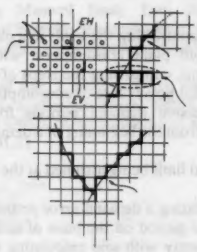
Christian Richard, Rennes; Francis Kretz, Cesson Sevigne, and Albert Benveniste, Rennes, all of France, assignors to L'Etat Francais represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunications), Issy les Moulineaux and Etablissement Public de Diffusion dit "Telediffusion de France", Montrouge, both of, France

Filed Jun. 11, 1980, Ser. No. 158,588

Claims priority, application France, Jun. 29, 1979, 79 16914

Int. Cl.³ H04N *7/13, 5/40;* **G06F** *15/20*

U.S. Cl. 364—515 **13 Claims**



1. For use in a differential coded pulse modulation coder or decoder a device for following and recursively estimating the local state of picture contours defined by lines of N points, N being an integer, said points being distributed in accordance with an orthogonal sampling structure, each line beginning with a line start signal DL and corresponding to a binary parity signal PL, said points being defined by successive numerical samples, wherein said device comprises:

(A) a sequential memory having three sections with an input which receives the sequence of numerical samples designated X_n, in which n is a rank of the sample successively assuming integral values of 1 at N, and at least three outputs supplying, when the sample of rank n+1 is received at the input respectively: the sample of rank n, i.e. X_n, the sample of rank n-1, i.e. X_{n-1} belonging to the same line as the sample received and the sample of rank n belonging to the preceding line, ie. X_n;

(B) an examination circuit incorporating:

means for detecting between two successive samples X_{n-1} and X_n of the same line, the presence of a variation in the value of the sample exceeding a certain threshold and for producing a corresponding signal called "the vertical contour element" and designated EV_n;

means for detecting between two samples X_n' and X_n of the same rank but belonging to two adjacent lines the presence of a variation in the value of the sample exceeding the same threshold and for producing a corresponding signal called "horizontal contour element" and designated EH_n;

two connected contour elements, an image contour then being defined by a system of connected contour elements;

means for detecting the absence of a contour element at the point of rank n, said means supplying a signal designated $HOLE_n$;

means for counting the total number of horizontal contour elements and the total number of vertical contour elements examined along a line for each connected zone, said numbers being converted into signals H and V at the end of the connected zone;

means for detecting the connected horizontal and vertical contour elements and for detecting the systems of such connected elements along a line, said systems being called connected zones and each connected zone being between a first contour element and a last contour element, said means being able to supply a signal when a connected zone ends at a point of rank n, the signal being designated FZC_n;

the examination circuit thus having the three inputs receiving the samples X_n, X_{n-1} and X_n' and six outputs respectively supplying the signals EV_n, EH_n, V, H, FZC_n, $HOLE_n$;

(c) a loop functioning in a recursive manner and incorporating the means for calculating a magnitude representative of the contour and called state of the contour and designated E for storing the state

E' obtained for the line preceding that which is examined and for calculating as a function of said state E and signals EH_n, $HOLE_n$, FZC_n, V and H obtained for the examined line the new state E of the contour on said examined line.

4,363,104

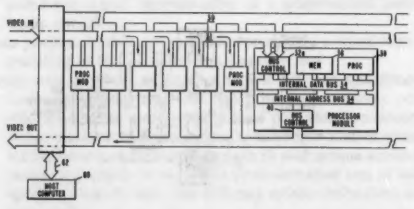
IMAGING SYSTEM HAVING MULTIPLE IMAGE COPYING AND HIERARCHICAL BUSING

Thomas A. Nussmeier, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 22, 1980, Ser. No. 189,260

Int. Cl.³ G06F *15/20;* **H04N** *5/14*

U.S. Cl. 364—515 **16 Claims**



1. An imaging system wherein video data from each video frame of video data words is multiplexed serially by a row, including means for enhancing said video data by operating on successive kernels of said data words, comprising:

a plurality of main processors and memories individually associated with said processors, each of said processors corresponding to an individually assigned block of video data words in said frame;

a plurality of bus control means, individually associated with said processors, each one of said bus control means for selecting those data words from said video data words which lie within the corresponding assigned data word block;

data bus means for simultaneously distributing each of said data words to said k bus control means; and

a plurality of internal data bus means individually associated with said plurality of bus control means, each of said internal data bus means for carrying the selected ones of said data words from the corresponding bus control means to the corresponding one of said memories and for permitting the corresponding one of said processors to access

data words in said corresponding memory, wherein each processor is programmed with selected operator means for generating an enhanced value from each kernel of data words stored in the corresponding memory.

4,363,105

MICROCOMPUTER-CONTROLLED CIRCUIT TESTER

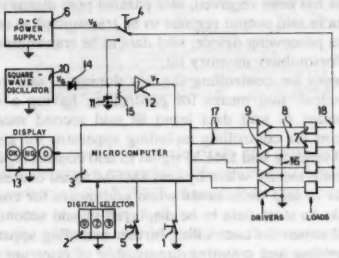
Horst Plassmeier, Herford, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,931

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935585

Int. Cl.³ G05B *19/02*

U.S. Cl. 364—580 **7 Claims**



1. In a system for the programmed control of a plurality of loads provided with respective operating circuits including drivers individually associated therewith, and computer means for cutting said drivers in and out according to a given program,

the combination therewith of testing equipment for individually checking the integrity of any of said operating circuits, said equipment comprising:

a generator of a pulsating unipolar test voltage connectable to a common terminal of said operating circuits in parallel with a capacitance chargeable by said generator through a unidirectionally conductive connection;

sensing means connected across said capacitance for detecting the magnitude of a voltage difference developed thereacross, said sensing means having an output connected to said computer means;

selector means, connected to said computer means, for identifying a driver of an operating circuit to be checked, said computer means being responsive to said selector means for activating the driver so identified whereby the voltage difference across said capacitance decreases upon conduction of the selected operating circuits;

switch means operable to cause said computer means to emit a series of brief activating pulses, of a duration insufficient to operate the associated load, to a driver identified by said selector means, said computer means being responsive to an output signal from said sensing means resulting from a significantly reduced capacitance charge to terminate the emission of said activating pulses; and

indicating means operable by said computer means in response to an output signal from said sensing means to register the state of conduction of the selected circuit.

4,363,106

COMPUTATION MODULE FOR ADDITION AND MULTIPLICATION IN RESIDUE ARITHMETIC

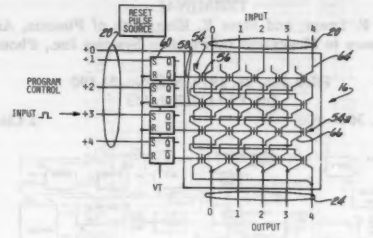
Anthony M. Tai, Plymouth, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Aug. 13, 1980, Ser. No. 177,954

Int. Cl.³ G06F *7/72*

U.S. Cl. 364—746 **14 Claims**

1. A computation module for generating an arithmetic function of two residues in the residue number system, comprising an array of light switches arranged in rows and columns, each of said light switches including an input for receiving light and an output for delivering light and being switchable between first and second light transmitting states for altering the path of light traveling therethrough; light transmission paths interconnecting each of the outputs of the light switches in one row with the inputs of light switches in a successive row to define a plurality of light transmitting channels through said module; first input means operably coupled with at least one of the light switches in the first row of the array for inputting a light signal



into the input of said one switch as a function of a first of the residues; a plurality of means operably coupled with at least certain of the rows of the array for simultaneously switching the state of all of the light switches in said certain rows of the array; and means operably coupled with said means for simultaneously switching and controlled by the second residue for actuating one of said means for switching all of the light switches in said certain of the rows of the array, whereby said light input signal is channeled through the array and outputs from a light switch in a successive row of the array at a position which is a function of the two residue numbers.

4,363,107

BINARY MULTIPLICATION CELL CIRCUIT

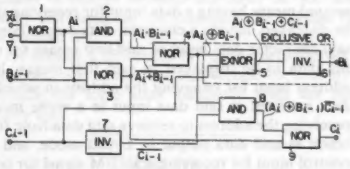
Masahide Ohhashi, Sagamihara, and Hisao Yanagi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 30, 1980, Ser. No. 192,201

Claims priority, application Japan, Oct. 1, 1979, 54-125316

Int. Cl.³ G06F *7/52*

U.S. Cl. 364—758 **2 Claims**



1. A binary multiplication cell circuit comprising:

a first NOR circuit for providing a partial product of one binary digit of a multiplicand and one binary digit of a multiplier;

a first AND circuit connected to receive an output signal of said first NOR circuit and an augend;

a second NOR circuit connected to receive said augend and the output signal of said first NOR circuit;

a third NOR circuit connected to receive an output signal of said first AND circuit and an output signal of said second NOR circuit;

an inverter for inverting a carry binary digit;

a second AND circuit connected to receive an output signal

of said inverter and an output signal of said third NOR circuit;

a fourth NOR circuit connected to receive an output signal of said second AND circuit and the output signal of said second NOR circuit; and

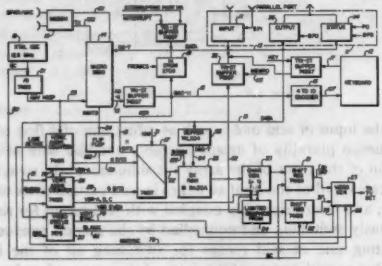
an exclusive OR circuit connected to receive the carry binary digit and the output signal of said third NOR circuit.

4,363,108

LOW COST PROGRAMMABLE VIDEO COMPUTER TERMINAL

Ronald E. Lange, and Steve E. King, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jun. 25, 1979, Ser. No. 51,590
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—900 **2 Claims**



1. A computer terminal for displaying data and for communicating with another data processing device comprising:

(a) a television monitor for displaying data presented at an input as a composite video signal including video data, horizontal sync and blanking data and vertical sync and blanking data;

(b) first means having an output coupled to said input of said television monitor and having a character data input for receiving the data to be displayed and Hsync and Line Active signals for control of horizontal sync and blanking and Vert Sync and Blank signals for controlling vertical sync and blanking, said first means for converting the signals at said inputs into said composite video signal;

(c) second means for storing the data to be displayed, said second means having a data input for receiving the data to be displayed, having a character data output connected to said character data input of said first means for supplying the data to be displayed to said first means, having an address input for receiving the address in which to store data received at said data input in a write mode or for receiving the address to retrieve said data from for presentation at said data output in a read mode, and having a control input for receiving a $MEM signal for controlling whether said second means is in said read or write mode;

(d) third means having an output connected to said address input of said second means, having an address bus input and having a horizontal and vertical address input, said third means switching the address at said address bus input to said output for use by said second means when in the write mode, wherein said third means switches the address at said horizontal and vertical address input to said output for use by said second means when in the read mode, said switching controlled by an ISW signal control input;

(e) clock means for providing a timing waveform;

(f) fourth means for counting the periods of said timing waveform, said fourth means including apparatus for generating said horizontal and vertical address signals and sending them to said third means, wherein said fourth means also generates said Hsync and Line Active signals and sends said Hsync and Line Active signals to said first means, said fourth means generating an interrupt request signal after each N horizontal address signals have been counted, wherein N is a predetermined number;

(g) keyboard means having a plurality of switches, having a plurality of scan inputs and having a plurality of sense outputs, said keyboard means causing a distinct logical state on said sense outputs for each distinct combination of logical states of said scan inputs and switch activation of said keyboard means;

(h) parallel port means having an input register and having an output register for receiving data in said input register from said other data processing device, said parallel port means setting a Portinbusy memory bit to signal when data has been received, said parallel port means receiving data in said output register to be transmitted to said other data processing device, said data to be transmitted having a Portoutbusy memory bit;

(i) means for controlling the functioning of said computer terminal, said means for controlling having a data bus coupled to said data input of said second means, said means for controlling including apparatus for generating and sending said $MEM signal to said control input of said second means, whereby said $MEM signal causes switchover to said write mode when said means for controlling seeks to store data to be displayed in said second means, said means for controlling further including apparatus for receiving and counting the number of interrupt requests from said fourth means and for generating and sending said Vert Sync and Blank signals to said first means upon predetermined counts of said interrupt request, said means for controlling supplying the address and ISW control signal to the address bus input and ISW control signal input of said third means, whereby said third means switches said address to the address input of said second means when said second means is in said write mode in order to control the location of storage in said second means of data to be displayed, said means for controlling being selectively coupled to said sense output of said keyboard means via said data bus, wherein a portion of said address bus is coupled to said scan input in order to scan said keyboard means in order to determine which character and control keys are activated, said means for controlling encoding data on said scan inputs and said sense outputs into a code and processing character data thus derived in accord with the control characters received from said keyboard means, said means for controlling being coupled to said input and output registers of said parallel port means for loading data to be transmitted to said other data processing device into said output register when so desired by said operator, wherein said Portoutbusy memory bit is set to signal said other data processing device that data is available to be read, said means for controlling scanning said Portinbusy memory bit to sense when data has been loaded in said input register by said other data processing device for use by said computer terminal, whereby said data is read and processed according to the desires of the operator.

4,363,109

CAPACITANCE COUPLED EEPROM

Raymond K. Gardner, Jr., Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1980, Ser. No. 211,109
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—94 **6 Claims**

1. An electrically erasable IGFET nonvolatile memory comprising:

a semiconductive material surface zone of one conductivity type;

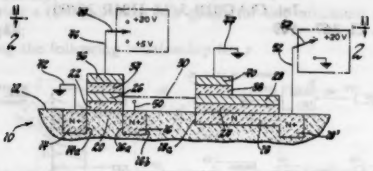
at least three opposite conductivity-type regions in said zone, two of which respectively serve as source and drain

regions of an IGFET and the third serves as a memory control region for that IGFET;

two polysilicon gate electrodes respectively insulatingly spaced above an IGFET channel between the source and drain regions and above the memory control region and in low resistance electrical connection only with each other;

two polysilicon control gate electrodes respectively insulatingly spaced above said floating gate electrodes;

means for applying an appropriate electrical potential simultaneously to both the channel control electrode and to said memory control region while maintaining said source



region and other control electrode at a relative zero potential, to store a nonvolatile charge on said floating gates for switching the IGFET channel from one conductivity condition to another; and

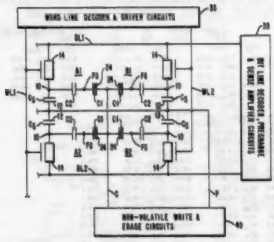
means for changing the potential on the memory control region to that of the source region and other control electrode, so that application of said appropriate potential to said channel control electrode removes the nonvolatile charge on said floating gates and allows said IGFET channel to switch back to its initial conductivity condition.

4,363,110

NON-VOLATILE DYNAMIC RAM CELL

Howard L. Kalter, Colchester; Harish N. Kotecha, Essex Junction, both of Vt., and Parsotam T. Patel, Round Rock, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,285
Int. Cl.³ G11C *11/24, 11/34*
U.S. Cl. 365—149 **21 Claims**



1. A memory cell comprising;

a storage capacitor having a storage node and a plate,

means for applying a reference voltage to said plate,

a control electrode,

a voltage divider circuit having serially-connected first and second capacitors and a floating gate connected to the common point between said first and second capacitors, said voltage divider circuit being disposed between said control electrode and said storage node,

an input/output line, and

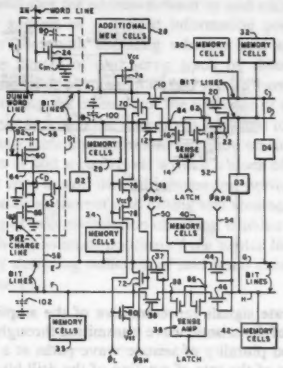
a transfer device disposed between said storage node and said input/output line.

4,363,111

DUMMY CELL ARRANGEMENT FOR AN MOS MEMORY

John D. Heightley, 3150 Monument Lake Rd., Monumet, Colo. 80132, and Sargent S. Eaton, Jr., 3361 Springridge Cir., Colorado Springs, Colo. 80906

Filed Oct. 6, 1980, Ser. No. 194,614
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—210 **10 Claims**



1. In an MOS memory having a plurality of memory cells each having a memory cell capacitor of a given size which is adapted to be charged so as to reflect the logic state of its memory cell, and having a plurality of bit lines and word lines for accessing a particular memory cell, a dummy cell arrangement for sensing the state of an accessed memory cell, comprising:

a dummy cell having a dummy capacitor of substantially the same given size as a memory cell capacitor and adapted to be precharged to a selected voltage level;

means for selectively coupling the dummy capacitor to first and second bit lines such that the capacitance associated with the dummy capacitor effects substantially equal transfers of charge between the first and second bit lines and the dummy capacitor, thereby imparting substantially equal voltage changes to the first and second bit lines;

means for selectively coupling the capacitor associated with the accessed memory cell to a third bit line so as to effect a transfer of charge between the latter bit line and the memory cell capacitor for changing the voltage on the third bit line; and

means for sensing a difference in voltage between the third bit line and one of the first and second bit lines so as to determine the logic state associated with the selected memory cell.

4,363,112

APPARATUS AND METHOD FOR DETERMINING THE POSITION OF A GAS-SATURATED POROUS ROCK IN THE VICINITY OF A DEEP BOREHOLE IN THE EARTH

Bernard Widrow, 860 Lathrop Dr., Stanford, Calif. 94305

Filed Apr. 18, 1980, Ser. No. 141,271
Int. Cl.³ G01V *1/40, 1/28, 1/20*
U.S. Cl. 367—30 **5 Claims**

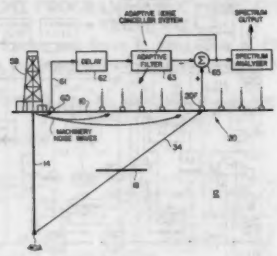
1. Apparatus for determining while drilling the position of a gas-saturated rock formation in the vicinity of a borehole in the earth, comprising:

(a) a rotary drill bit for generating periodic seismic waves as it drills into the earth;

(b) a plurality of transducer means located on the surface at preselected positions for defining a first plurality of seismic wave paths between a first position of said drill bit on one side of said gas-saturated porous rock formation and

said plurality of positions on the surface and a second plurality of seismic wave paths between at least a second position of said drill bit on said same side of said gas-saturated porous rock formation and said plurality of positions on the surface, said transducers simultaneously generating signals responsive to said seismic waves at said first and second drill bit positions;

(c) means including frequency selection means connected to receive the signals generated by said transducers and



generate signals representative of the amplitude and energy of the seismic wave transmitted through said first and second plurality of seismic wave paths at a selected harmonic of the rate of rotation of the drill bit;

(d) means for comparing the amplitude and energy of the simultaneously generated signals to identify signals corresponding to seismic waves traveling through said gas-saturated porous rock formation at said first and second locations; and

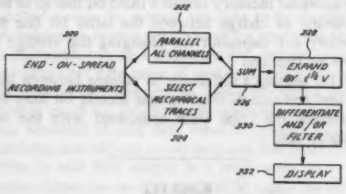
(e) means for determining from the identified signals the position of the gas-saturated porous rock formation.

4,363,113

SEISMIC EXPLORATION WITH SIMULATED PLANE WAVES

Mehmet T. Taner, Houston, Tex.; Fulton Koehler, Minneapolis, Minn.; Nigel A. Anstey, Kent, England, and Michael J. Castelberg, Houston, Tex., assignors to Seiscom Delta, Inc., Houston, Tex.

Filed Feb. 10, 1975, Ser. No. 548,572
Int. Cl.³ G01V *1/28, 1/38*
U.S. Cl. 367—63 **28 Claims**



1. A method of seismic exploration by simulating from substantially spherical seismic waves the reflection response of the earth to seismic energy having a substantially continuous wavefront over an extent of an area being explored having at least one dimension which is large relative to a seismic wavelength, comprising the steps of:

(a) imparting the spherical seismic energy waves into the earth from a seismic source at a source position;

(b) generating a plurality of reflection signals in response to the seismic energy waves at a set of receiver positions spaced in an array over an extent having at least one dimension which is large relative to a seismic wavelength; and

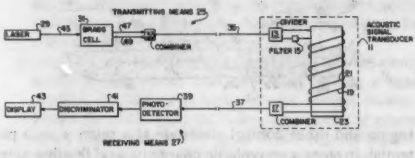
(c) summing the reflection signals to form for the source position a signal simulating the reflection response of the earth to seismic energy having a substantially continuous wavefront over at least one dimension which is large relative to a seismic energy wavelength.

4,363,114

LOW NOISE REMOTE OPTICAL FIBER SOUND DETECTOR

Joseph A. Bucaro, Herndon; James H. Cole, Great Falls, both of Va., and Henry D. Dardy, Upper Marlboro, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1981, Ser. No. 226,986
Int. Cl.³ G02B *5/14*; H04R *29/00*
U.S. Cl. 367—149 **22 Claims**



1. An acoustic signal transducer comprising:

power-dividing means for dividing a light beam of two frequencies into a pair of equal-power reference and signal beams having different ratios of the two frequencies;

modulating means for modulating at least the signal beam by an acoustic signal; and

power-combining means for combining the modulated pair of beams into a resultant beam carrying the modulating acoustic signal.

4,363,115

LOW FREQUENCY, LOG-PERIODIC ACOUSTIC ARRAY

Frank W. Cuomo, East Providence, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,055
Int. Cl.³ H04R *1/44*
U.S. Cl. 367—154 **1 Claim**

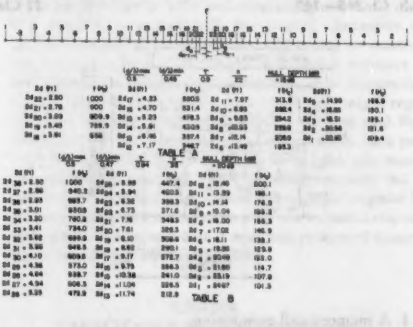


TABLE B

1. A method of determining the sequential dipole spacing of a plurality of hydrophone dipole pairs about an array acoustic axis so as to form a low frequency, log-periodic acoustic line array wherein the acoustic beam pattern formed by each independent dipole pair has a quasi-constant directionality over a frequency band and the assembled array covers at least a decade range of frequencies through juxtaposition of contiguous frequency bands, said method comprising the steps of:

selecting an operational frequency range;

determining the spacing ($2d_n$) of the innermost dipole pair using the following relationship

$$2\,d_n=(c/f) \quad (A)$$

wherein d_n is the distance of each dipole element from the array acoustic axis, c is the speed of sound in seawater at the operational frequency, temperature and pressure the array will experience and f is the maximum desired operational frequency;

selecting a minimum null depth commensurate with desired directionality descrimination;

selecting a $(d/\lambda)_{max}$ for the ideal null from a graph wherein d equals $2d_n$ and represents the distance between dipole pairs and λ is the wavelength of the associated acoustic frequency;

selecting a $(d/\lambda)_{min}$ from said graph for said minimum null depth;

solving the following relationship for τ

$$\log\left(\frac{d}{\lambda}\right)_{max} = \log\left(\frac{d}{\lambda}\right)_{min} - \log\tau \quad (B)$$

wherein τ is an arbitrary constant associated with the log-period;

solving the following relationship for d_{n-1}

$$d_{n-1} = \frac{d_n}{\tau} \quad (C)$$

using τ from (B) supra;

repeating (C) supra iteratively substituting the previous d_{n-1} result for d_n in (C) and solving for new d_{n-1}'s until $2d_n$, $2d_{n-1}$, etc. spacing for a frequency decade has been described; and

arranging said hydrophones in accordance with said $2d_n$, $2d_{n-1}$, etc. spacing.

4,363,116

METHOD, APPARATUS AND RECORD CARRIER BODY FOR OPTICALLY WRITING INFORMATION

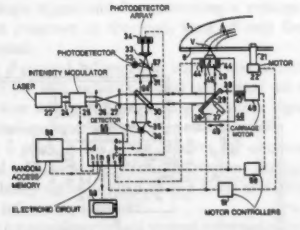
Wilhelm J. Kleuters; Gerrit B. Gerritsen, and Johannes J. Verboom, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 925,229, Jul. 17, 1978, abandoned. This application Apr. 14, 1980, Ser. No. 140,409

Claims priority, application Netherlands, Mar. 16, 1978, 7802859

Int. Cl.³ G11B *7/00, 21/08, 21/10*

U.S. Cl. 369—30 **21 Claims**



1. A method of recording information on a record carrier body having a preformed, optically detectable, elongated servo track for guiding a beam of radiation, said servo track comprising a plurality of successive sections extending in the track direction, each section having a first portion containing a first plurality of preformed, optically detectable areas spaced from each other in the track direction, and an information portion adjoining said first portion and having thereon a radiation sensitive layer, said areas of said first plurality in said first portion of each section comprising address areas which define an address of said information portion of that section, and the information portion of a given section adjoining the first portion of an adjacent section, said method comprising the steps of focussing a beam of radiation to a single spot on said preformed servo track, producing relative movement between said spot and said record carrier body, switching the intensity of said radiation in said beam to a first level at which the intensity is not sufficient to produce an optically detectable change in said radiation sensitive layer, with said beam at said first level, reading with said spot the address defined by said address areas to detect the address of a desired information portion and simultaneously therewith checking whether said spot coincides with the center of said servo track by detecting the radiation of said beam coming from said record carrier body, thereafter switching the intensity of the radiation of said beam to a second level at which the intensity is sufficient to produce an optically detectable change in said radiation sensitive layer, with said beam at said second level writing a block of information with said spot in said desired information portion associated with the address thereof read during said reading step, and during writing of said information checking whether said spot coincides with the average position of the center line of said servo track by detecting radiation of said beam coming from said record carrier.

4,363,117

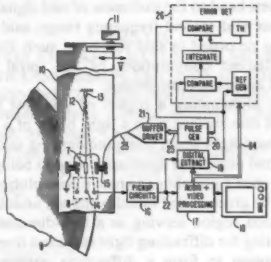
VIDEO DISC WITH DYNAMIC STYLUS CLEANING

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,242

Int. Cl.³ G11B *9/06, 17/02, 21/10*

U.S. Cl. 369—43 **5 Claims**



1. In a video disc player of the type wherein signal is recovered from a disc record by a disc engaging stylus, said stylus being susceptible to accumulating foreign matter thereon and thereby tending to degrade signal recovery, and wherein the recorded video signal includes sequential digital track identification signals regularly interspersed therein, said player having circuitry for detecting said digital signals, said player further including means responsive to a control signal for translating the stylus in a direction radially across the record in an oscillatory fashion to dislodge said foreign matter, an improved means responsive to said detected digital track identification signals for generating said control signal comprising:

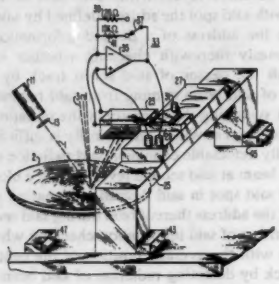
first means for determining errors in the detected digital information signals; and

second means for producing said control signal when the number of errors in a predetermined number of lastmost recovered identification signals exceeds a predetermined value.

4,363,118
SOUND CARRIER AMPLITUDE MEASUREMENT SYSTEM

William R. Roach, Rocky Hill, and Istvan Gorog, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,355
Int. Cl.[3] G11B 27/36; G01N 21/32
U.S. Cl. 369—58 10 Claims



1. Depth measuring apparatus for use with a disc-shaped substrate having a spiral groove formed on a surface thereof, wherein signal information is recorded in said spiral groove as undulations which vary about a given nominal groove depth, said signal information being recorded in said groove over first and second given frequency ranges, said signal information recorded over said first given frequency range being recorded over a low frequency range and said information recorded over said second given frequency range being recorded over a high frequency range, the peak-to-peak variation of said undulations over said first given frequency range being less than the peak-to-peak variations of said undulations over said second given frequency range, said signal information recorded over said first given frequency range being recorded in a spiral groove in a test band to the exclusion of said signal information recorded over said second frequency range, said signal information being recorded in said test band such that signal elements in adjacent convolutions of the spiral are radially aligned; said apparatus comprising:

means for illuminating a region of said test bands of the grooved disc surface with a light beam of a given wavelength, said light beam being incident on said surface at a nonnormal angle, the illuminated region being sufficiently large to span a plurality of groove convolutions, the structure of the grooves and radially aligned undulations in said illuminated region serving as a two-dimensional diffraction grating for diffracting light reflected from said illuminated region to form a diffraction pattern comprising respectively separated diffraction order beams of light;

means for detecting the light power in each of a plurality of said diffraction order beams; said means for detecting having a light accepting surface;

means coupled to said detecting means, for indicating a measure of said detected light powers; and

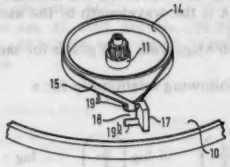
movable frame member, supporting said detecting means, for positioning said detecting means in a first position to measure the light powers in a first set of diffraction order beams of light and in a second position to measure the light powers in a second set of diffraction order beams of light

whereby the measurement in said first position provides a first estimate of the peak-to-peak variations of said undulations over said first given frequency range and the measurement in said second position provides a second estimate, and an internal consistency check, of the peak-to-peak variations of said undulations over said first given frequency range.

4,363,119
METHOD OF AND APPARATUS FOR ASSEMBLING A BELT DRIVE OF A RECORD PLAYER

Philip H. Evans, Stourbridge, England, assignor to BSR Limited, Warley, England

Filed Jun. 10, 1981, Ser. No. 272,193
Claims priority, application United Kingdom, Jun. 13, 1980, 8019412
Int. Cl.[3] G11B 3/60
U.S. Cl. 369—266 9 Claims

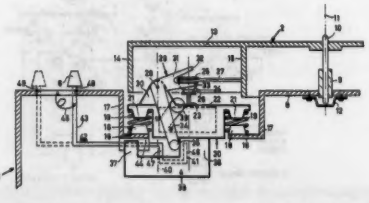


1. A record player of the type having a belt drive in which an endless resilient belt passes around a motor driving spindle which extends from a deck plate, and around a drum provided on the underside of a turntable, the turntable being mounted for rotation on a mounting means provided on the deck plate, further comprising a turntable having a temporary belt holding means on the underside of said turntable comprising a member having a first end extending away from the turntable underside and a second end attached to said underside and further including a holding portion comprising a free ended portion attached at one end to the first end of said member and extending non-radially perpendicularly to the rotational axis of the turntable, the holding means being spaced radially outwardly of the drum of the turntable and the motor driving spindle of the deck plate, and an abutment projecting upwardly from the deck plate of the record player and positioned radially outwardly of the drum and inwardly of the holding means.

4,363,120
RECORD PLAYER SPEED CHANGING MECHANISM

Henri M. Grobben, and Michel H. F. Decoster, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,235
Claims priority, application Netherlands, Jan. 10, 1980, 8000151
Int. Cl.[3] G11B 3/60; F16H 7/08
U.S. Cl. 369—267 8 Claims



1. A record player comprising

a main frame,

a turntable having a cylindrical drum, supported on the main frame for rotation about an axis, the drum being concentric with said axis,

a sub-frame resiliently mounted relative to the main frame,

a drive motor mounted on the sub-frame, having a motor spindle extending at least substantially parallel to said turntable axis, said motor spindle further including a pul-

ley formed with two grooves of different diameters in parallel planes,

a flexible belt disposed to pass around said cylindrical drum and engaging selectively in one or the other groove of the pulley,

a switching member comprising a switching fork, movable between two stationary positions to effect transfer of the belt from one groove to the other,

a control member mounted on the main frame,

means for coupling the control member to the switching member to effect the transfer, and

positioning means for retaining the switching fork in the respective stationary position after transfer of the belt,

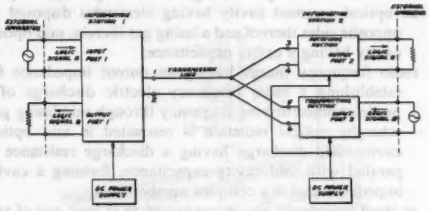
characterized in that the switching member is mounted on the sub-frame for movement between the two stationary positions, and that the record player further comprises stop means connected to the sub-frame for determining the stationary positions of the switching member, and means for disengaging the switching member from the control member when the switching member is in either of the stationary positions.

4,363,121

METHOD AND SYSTEM FOR SIMULTANEOUS BIDIRECTIONAL TRANSMISSION OF INFORMATION

Fredrik Schlyter, Fairfield, Conn., assignor to DuArt Film Laboratories, New York, N.Y.

Filed Nov. 14, 1979, Ser. No. 94,296
Int. Cl.³ H04L 5/14
U.S. Cl. 370—24 15 Claims



11. A method for simultaneously transmitting information between a first and a second information station, said method including the steps of:

providing a first information station for receiving a first binary logic signal and for generating a voltage polarity signal in response to the logic state of said first binary logic signal,

providing a second information station and a receiver responsive to said polarity signal generated in said first information station for generating an output signal at said second information station,

providing a pair of transmission wires for connecting said first and said second information stations through which said polarity signal is transmitted from said first to said second information station,

providing a transmitter in said second information station for receiving a second binary logic signal and for drawing or not drawing a current, independent of said polarity signal, from said first information station and through said transmission wires in response to the logic state of said second binary logic signal,

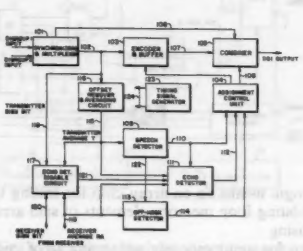
providing means in said first information station for detecting current drawn by said transmitter through said transmission wires and generating an output signal at said first information station in response to said current drawn by said transmitter.

4,363,122

MITIGATION OF NOISE SIGNAL CONTRAST IN A DIGITAL SPEECH INTERPOLATION TRANSMISSION SYSTEM

David H. A. Black, Chelsea, Canada; Robert H. Joyce, Menlo Park, Calif.; Fouad Daaboul, Verdun, and Tiu Le Van, Touraine, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 16, 1980, Ser. No. 187,821
Int. Cl.³ H04J 6/02; H04B 1/62
U.S. Cl. 370—81 14 Claims



1. A method of mitigating noise signal contrast in a multichannel digital speed interpolation transmission system, comprising the steps of:

determining each channel which is active and each channel which carries background noise;

transmitting the active channels; and

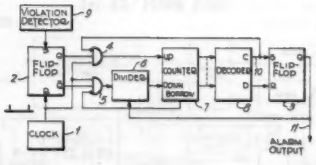
transmitting the channels which carry background noise with a resolution which is dependent upon the number of channels transmitted and which is reduced as said number is increased.

4,363,123

METHOD OF AND APPARATUS FOR MONITORING DIGITAL TRANSMISSION SYSTEMS IN WHICH LINE TRANSMISSION ERRORS ARE DETECTED

Wayne D. Grover, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 1, 1980, Ser. No. 211,507
Int. Cl.³ G01R 31/28
U.S. Cl. 371—5 12 Claims



1. A method of monitoring a digital transmission system in which errors are detected, comprising:

defining periods during each of which a plurality of errors may occur;

determining whether or not at least one error occurs in each of said periods;

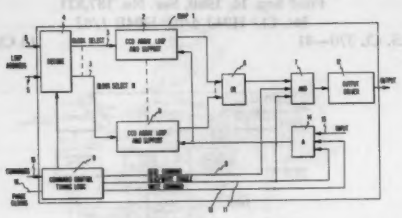
in respect of each period, incrementing a digital value in a direction which is dependent upon the result of the determination; and

producing an output signal in response to the digital value having a predetermined level.

4,363,124
RECIRCULATING LOOP MEMORY ARRAY TESTER

Frederick J. Aichelmann, Jr., Hopewell Junction, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,373
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—21 **3 Claims**



1. Logic means on an array chip for testing the constituent recirculating loop memory elements of said array, said means comprising

means for simultaneously addressing all of said elements and for loading said elements in parallel with the same test bits and

single comparison gate means connected to the outputs of all said elements for ANDing said outputs to produce a first signal when all said outputs are identical on a serial bit-by-bit basis and to produce a second signal when all said outputs are not identical,

wherein said comparison gate means comprises a multi input, multi output inverter circuit and first and second multi input AND circuits,

means for applying said test bits from all said elements to respective inputs of said inverter circuit and to respective inputs of said first AND circuit,

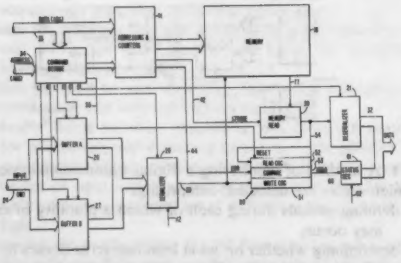
said second AND circuit being coupled to receive the multi outputs from said inverter circuit, and

means for combining the outputs of said first and second AND circuits.

4,363,125
MEMORY READBACK CHECK METHOD AND APPARATUS

James A. Brewer, Boulder, Colo., and John A. Lowy, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,633
Int. Cl.³ G06F *11/00*; G11C *29/00*
U.S. Cl. 371—71 **10 Claims**



1. A data storage means for storing data received from a source comprising:

a cyclic memory means having a plurality of data blocks for storing data;

writing means for sequentially writing said received data in said plurality of blocks of said cyclic memory means over a corresponding plurality of cycles of said memory means;

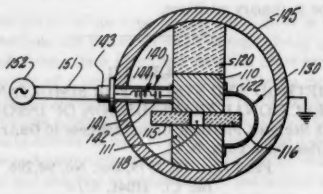
reading means for reading after a one-cycle delay and simultaneously with said writing during ones of said plurality of said cycles, said data written in each said block of said cyclic memory means during the immediately preceding cycle; and

means for comparing said received data and said data read by said reading means to detect any difference therebetween.

4,363,126
TUNED-CIRCUIT RF-EXCITED LASER

Peter P. Chenausky, Avon; Erroll H. Drinkwater, Portland, and Lanny M. Laughman, Bolton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 10, 1980, Ser. No. 214,858
Int. Cl.³ H01S *3/09*
U.S. Cl. 372—38 **4 Claims**



1. A radio frequency-excited gas laser comprising:

an optical resonant cavity having electrodes disposed on opposite sides thereof and a lasing gas therein, said optical cavity having a cavity capacitance;

radio frequency means having an output impedance for establishing a radio frequency electric discharge of a predetermined driving frequency through said lasing gas, whereby optical radiation is resonated in said optical cavity, said discharge having a discharge resistance in parallel with said cavity capacitance, forming a cavity impedance that is a complex number; and

an input impedance circuit connected to at least one of said electrodes and to said radio frequency means for coupling power from said radio frequency means to said radio frequency electrode discharge, said input impedance circuit having a complex impedance the imaginary part of which substantially cancels the imaginary part of said cavity impedance at said driving frequency, characterized in that: at least one inductance is connected between said electrodes in parallel with said discharge resistance and cavity capacitance to form an electrical resonant circuit having a complex RLC impedance and a predetermined resonant frequency.

4,363,127
LINE SIGNALING APPARATUS AND TECHNIQUES FOR DIGITAL DATA LINKS

Randall G. Evans, and James F. Buddenhagen, both of San Jose, Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jan. 12, 1981, Ser. No. 224,367
Int. Cl.³ H03K *13/22*
U.S. Cl. 375—30 **7 Claims**

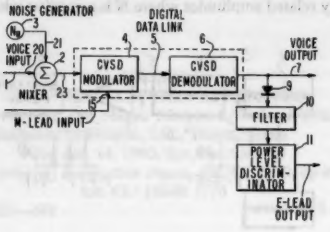
1. Apparatus for distinguishing between an analog input signal and a line status signal wherein each of said signals is transmitted over a digital data link, comprising:

a noise generator connected to said input signal;

an analog-to-digital converter having a first input connected to said noise-corrupted input signal and a second input

connected to said line status signal, and having an output connected to an input of said digital data link;

a digital-to-analog converter having an input connected to an output of the digital data link and having an output connected to power distinguishing means;



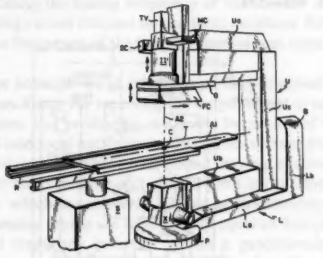
wherein the amount of noise generated by said noise generator is preselected to enable said power distinguishing means to distinguish between said noise-corrupted input signal and said line status signal.

4,363,128

X-RAY DRIVE APPARATUS

John K. Grady, 277 Baker Ave., Concord, Mass. 01742, and Paul G. Rice, Lincoln, Mass., assignors to John K. Grady, Lincoln, Mass.

Filed Sep. 29, 1980, Ser. No. 191,532
Int. Cl.³ G03B 41/16
U.S. Cl. 378—181 **10 Claims**



1. Radiological apparatus comprising:

a support;

radiation source means and radiation receptor means at spaced positions on the support for examination of a subject at a location therebetween, the source and receptor means having a common radiation axis extending through the subject location, and each means being mounted on the support to move along the radiation axis;

a motor, a first drive linkage and a first clutch, the motor being connected by the linkage and clutch to one of the moveable radiation means to drive said one means along the radiation axis;

a cross drive linkage, a second clutch and a second drive linkage forming a drive connection between the first drive linkage and the other radiation means; and

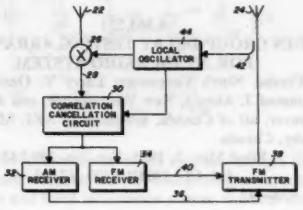
means for selectively engaging the respective clutches so that with either clutch disengaged one of the radiation means is driven independently to select the spacing between the radiation means, and with both clutches engaged both radiation means are driven interdependently so as to vary the radiation image magnification of the subject while maintaining a selected spacing between the radiation means.

4,363,129

METHOD AND MEANS OF MINIMIZING SIMULCAST DISTORTION IN A RECEIVER WHEN USING A SAME-FREQUENCY REPEATER

Jona Cohn, Morton Grove; Allen L. Davidson, Crystal Lake, and Anthony P. van den Heuvel, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 11, 1980, Ser. No. 215,589
Int. Cl.³ H04B 7/16
U.S. Cl. 455—17 **7 Claims**



1. A method of minimizing simulcast distortion when broadcasting an information signal directly to an FM receiver and indirectly to the FM receiver through a same-frequency repeater comprising the steps of:

generating an RF signal that is amplitude-modulated with the information signal and that is frequency-modulated with the information signal delayed by a predetermined length of time;

broadcasting the RF signal to the FM receiver and to the same-frequency repeater;

detecting the amplitude-modulated signal at the same-frequency repeater and applying the detected signal as frequency modulation to a repeater to produce a repeated RF signal that is inherently delayed in the repeater by the predetermined length of time; and

broadcasting the repeated RF signal to the FM receiver;

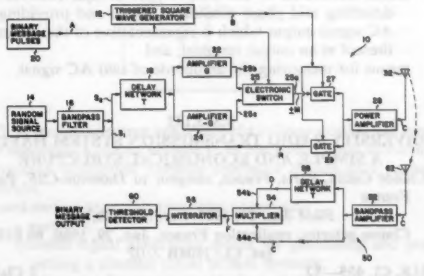
whereby the RF signal and the repeated RF signal will both be delayed at the FM receiver, by essentially the predetermined length of time, thereby minimizing simulcast distortion.

4,363,130

BINARY DIGITAL COMMUNICATION SYSTEM

William R. Ramsay, Mt. View, and James J. Spilker, Jr., Palo Alto, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Mar. 18, 1960, Ser. No. 16,099
Int. Cl.³ H04K 1/00
U.S. Cl. 455—27 **5 Claims**



1. A binary digital communication system comprising a transmitter and receiver: said transmitter comprising means for alternately radiating in response to the digits of a binary mes-

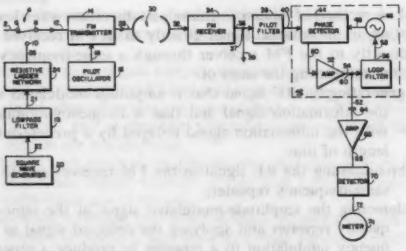
sage two signals of non-periodic energy which have been delayed by a predetermined amount with respect to one another, and means for phase shifting one of said signals by 180° prior to radiation thereof in response to one of the "0" and "1" digits of the binary message; said receiver comprising means for receiving the signals alternately radiated by said transmitter, means for delaying the alternately received signals with respect to one another so they are brought back into correlation, and correlation-sensitive means to which the correlated received signals are fed, the output of said correlation-sensitive means being representative of said binary message.

4,363,131

BUILT-IN GROUP DELAY TESTING ARRANGEMENT FOR AN FM RADIO SYSTEM

Abram Froese, North Vancouver; Larry Y. Onotera, Surrey; Muhammad J. Ahmed, New Westminster, and Alvin Liebelt, Vancouver, all of Canada, assignors to AEL Microtel, Ltd., Burnaby, Canada

Filed Mar. 2, 1981, Ser. No. 239,743
Int. Cl.³ H04B *1/00, 17/00*
U.S. Cl. 455—42 **3 Claims**



1. In a radio system, including a transmitter and a receiver, which employs frequency modulation of information signals, apparatus for providing a built-in group delay test arrangement, comprising:

a transmitter having a baseband input terminal for accepting signals to be conditioned for radio transmission to said receiver;

a pilot frequency oscillator having an output terminal connected to an input terminal of said transmitter;

means for selectively applying a square-wave test signal to said baseband input terminal for providing a predetermined deviation of said frequency modulation transmitter;

an FM receiver adapted to receive the signal conditioned for transmission, said receiver providing at an output port a phase modulated signal caused by system group delay slope encountered in the course of transmission through the system;

means connected to the output port of said receiver for detecting said phase modulated signal and providing an AC signal output which is representative of the deviation thereof at an output terminal; and

means for measuring the amplitude of said AC signal.

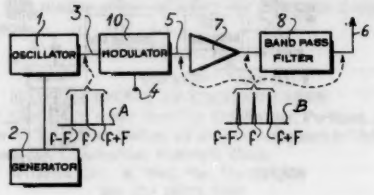
4,363,132

DIVERSITY RADIO TRANSMISSION SYSTEM HAVING A SIMPLE AND ECONOMICAL STRUCTURE

Claude Collin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 27, 1981, Ser. No. 228,724
Claims priority, application France, Jan. 29, 1980, 80 01898
Int. Cl.³ H04B *7/02*
U.S. Cl. 455—52 **5 Claims**

1. A system for radio transmission of high-frequency signals modulated by the information to be transmitted between two terminal stations via a plurality of diversity propagation channels, each terminal station being equipped respectively with at least one transmitter and one superheterodyne receiver, wherein the transmitter comprises a carrier-signal generator having a carrier signal output, an oscillator having a signal frequency F for frequency modulating said carrier signal according to a modulation index so determined as to produce a signal having a spectrum comprising N spectral lines having closely related amplitudes where N is a positive whole number



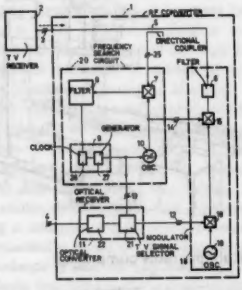
greater than 1, a digital phase modulation device having a signal input coupled to the output of the generator and a modulation input adapted to receive information signals whose highest frequency is lower than the frequency F and an output, an amplifier coupled to the output of the modulation device and followed by a bandpass filter having a bandwidth which is slightly greater than (N−1)F.

4,363,133

CONVERTER CIRCUIT FOR TELEVISION SIGNALS

Abram van de Grijp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,261
Int. Cl.³ H04B *1/18, 1/26*
U.S. Cl. 455—131 **5 Claims**



1. A RF signal converter circuit positioned externally to a superheterodyne receiver, said converter circuit having a signal input and a signal output, said output being connected to the RF aerial input of said superheterodyne receiver, said converter circuit comprising:

a cascade arrangement of a RF signal selector which provides a selected and modified RF signal and a modulator connected between the signal input and the signal output of said converter,

said converter circuit also comprising a coupling circuit connected to said RF aerial signal input and said converter signal output for coupling oscillator radiation present at the aerial input of said RF superheterodyne receiver,

a frequency search circuit connected to said coupling circuit for receiving said oscillator radiation present at the aerial input of said RF receiver, one output of said frequency search circuit being coupled to said RF signal selector to control the selection of a RF signal from RF signals ap-

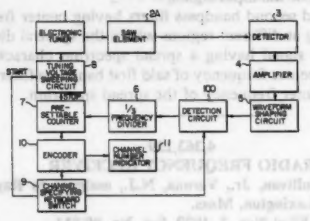
plied to a signal input of said signal selector, another output thereof being coupled to said modulator to control modulation of the selected and modified RF signal onto a carrier frequency.

4,363,134

CHANNEL SELECTION APPARATUS

Toshinori Murata, and Shigeo Matsuura, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 168,733
Claims priority, application Japan, Jul. 14, 1979, 54-88691
Int. Cl.³ H04B 1/16
U.S. Cl. 455—161 **9 Claims**



1. A channel selection apparatus comprising:

an electronic tuner having a local oscillator which produces an output signal whose output frequency is variable for controlling the tuning frequency of the tuner;

a sweeping circuit coupled to said local oscillator for sweeping the frequency of the output signal of said local oscillator;

a surface acoustic wave comb-shape filter coupled to said local oscillator for receiving the output signal of said local oscillator and producing, when the frequency of the output of said local oscillator is swept from a lower frequency to a higher frequency, an output having a comb-shape output characteristic including a plurality of first output peaks which successively appear at predetermined first frequencies which are substantially equal to first predetermined frequency intervals within a predetermined frequency range of the output of said local oscillator and a second output peak just preceding to a first produced one of said first output peaks at a second frequency spaced by a second frequency interval which is greater than said first frequency interval;

a first detector coupled to receive the output of the surface acoustic wave comb-shape filter including means for detecting the first and second output peaks of said surface acoustic wave comb-shape filter and means for producing output signals corresponding to the first and second output peaks at said first and second frequency intervals, respectively;

a presettable counter including means for counting the number of peaks detected by said first detector;

a second detector coupled to receive the output signals of said first detector including means for discriminating the second frequency interval from the first frequency interval and means for producing an output signal indicative of the detection of said second frequency interval; and

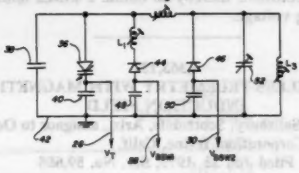
means coupled to said presettable counter and responsive to the output signal of said second detector for causing said presettable counter to start counting of the output peaks detected by said first detector which occur after detection of said second frequency interval by said second detector.

4,363,135

FOUR BAND VHF VARACTOR TUNER

Fred H. Moon, Mt. Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 27, 1980, Ser. No. 200,806
Int. Cl.³ H04N 5/44; H04B 1/16
U.S. Cl. 455—180 **7 Claims**



1. In a television receiver of the type including a three-band varactor tuned resonant circuit comprising a varactor diode; first, second and third inductance means; and first and second switching means selectively operable for connecting three different combinations of said inductance means across said varactor diode for tuning three different television signal bands, the improvement comprising:

means for selectively operating said first and second switching means for connecting four different combinations of said inductance means across said varactor diode to allow the tuning of four different VHF/CATV television signal bands; and

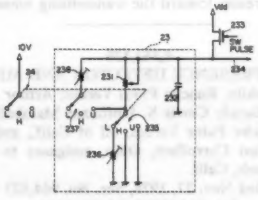
tuning means connected in circuit with said inductance means and having a variable reactance adjustable for facilitating the alignment of said resonant circuit for tuning one of said four bands.

4,363,136

STATION SELECTING APPARATUS

Koji Terami, Daito, and Isao Fujimoto, Katano, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 10, 1981, Ser. No. 242,229
Claims priority, application Japan, Mar. 19, 1980, 55-35239; May 1, 1980, 55-59243; May 10, 1980, 55-62110; May 13, 1980, 55-63763
Int. Cl.³ H04B 1/16
U.S. Cl. 455—180 **9 Claims**



1. A station selecting apparatus of a voltage synthesizer type for supplying a tuning voltage to an electronic tuner including a voltage controlled variable reactance device as a tuning element,

said station selecting apparatus comprising

a memory,

channel signal generating means for generating and presetting a channel signal to said memory,

read means for reading said channel signal as necessary from said memory,

tuning voltage generating means for generating said tuning voltage responsive to a channel signal read from said read means, and

said channel signal generating means comprises

charging/discharging circuit means having capacitor means and variable resistor means, a time constant of which is changeable by said variable resistor, a different channel signal being generated responsive to said time constant, and

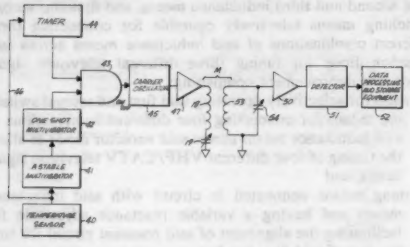
semifixed resistor means connected in series with said variable resistor means for defining a lower limit of said time constant, thereby to define a lower limit of said tuning voltage.

4,363,137

WIRELESS TELEMETRY WITH MAGNETIC INDUCTION FIELD

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Jul. 23, 1979, Ser. No. 59,656
Int. Cl.³ H04B *12/02*; H01V *1/40*
U.S. Cl. 455—40 **15 Claims**



1. A method for determining the temperature of a remote point in an in situ oil shale retort, the method comprising the steps of:

igniting the shale in the retort to initiate retorting along a retorting path;

implanting in the retort at the remote point a temperature sensor and means for transmitting an alternating magnetic induction field spaced behind the temperature sensor in the retorting path, the transmitting means including means for modulating the transmitted field responsive to the temperature sensor;

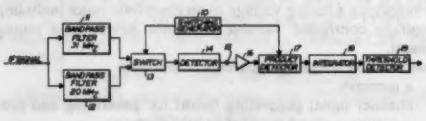
intercepting the modulated magnetic induction field outside the retort to determine the temperature as the retorting path progresses toward the transmitting means.

4,363,138

SIGNAL PRESENCE DETECTOR AND METHOD

Sidney B. Franklin, Rancho Palos Verdes; Arthur Garabedian, Manhattan Beach; Curtis S. Hoffman; Marshall Y. Huang, both of Rancho Palos Verdes, all of Calif., and Robert B. Marcum, West Carrollton, Ohio, assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 27, 1978, Ser. No. 964,127
Int. Cl.³ H04B *17/00, 1/10*
U.S. Cl. 455—226 **15 Claims**



1. A signal presence detector for an input signal having a known spectral distribution but accompanied by strong noise energy which may provide a negative signal-to-noise ratio, comprising:

a common input for receiving the input signal;

a first bandpass filter coupled to the common input and responsive to the input signal, the first bandpass filter encompassing one selected region within the spectral distribution;

a second bandpass filter coupled to the common input and responsive to the input signal, the second bandpass filter encompassing a second selected region within the spectral distribution;

a detector;

switching means for applying the outputs of said first and second bandpass filters to said detector in time shared fashion; and

means coupled to said detector and responsive to received energy levels from said bandpass filters which differ by at least a predetermined minimum amount for indicating the presence of the input signal;

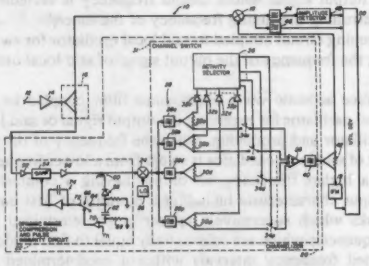
the first and second bandpass filters having center frequencies lying at different regions within the spectral distribution, the signal having a spread spectrum characteristic and the center frequency of said first bandpass filter being at the center frequency of the spread spectrum.

4,363,139

RADIO FREQUENCY RECEIVER

William B. Sullivan, Jr., Verona, N.J., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 2, 1979, Ser. No. 90,811
Int. Cl.³ H04B *1/30*; H03D *1/22*
U.S. Cl. 455—324 **10 Claims**



10. In combination:

(a) means for coupling signals within a predetermined band of frequencies to a pair of signal channels, a first one of such pair of signal channels comprising:

(i) bandpass filter means, fed by the signals coupled to the first one of the pair of signal channels, for passing therethrough signals in different portions of the predetermined band of frequencies;

(ii) detector means, fed by signals passed through the bandpass filter means, for detecting signals passing through the different portions of the predetermined band of frequencies of the bandpass filter means; and

(iii) means, responsive to the detector means, for coupling signals passing through a selected one of the different portions of the predetermined band of frequencies of the filter means to an output of the first one of the pair of signal channels;

(b) a mixer; and

(c) means for coupling a second one of the pair of signal channels and the output of the first one of the pair of signal channels to the mixer.

DESIGN PATENTS

GRANTED DEC. 7, 1982

ERRATA

For CLASS	See PATENT NO.
D18–001	267,151
D19–003	267,152
D17–077	267,153

267,128
BREATH DEFLECTOR ATTACHMENT FOR A HELMET
Ronald L. Pearce, 8709 Glenwood, Kansas City, Mo. 64138
Filed Jun. 16, 1980, Ser. No. 160,019
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

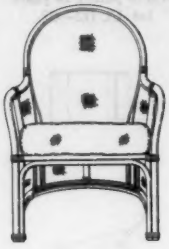
267,129
GOLF AID GLOVE
Rick A. Kneisley, 1310 Chestnut Ridge, Humble, Tex. 77339
Filed Nov. 12, 1980, Ser. No. 206,047
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361

267,130
BUCKLE
Isadore Goldman, Bronx, N.Y., assignor to C & C Metal Products Corp., Englewood, N.J.
Filed May 5, 1980, Ser. No. 146,406
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—405

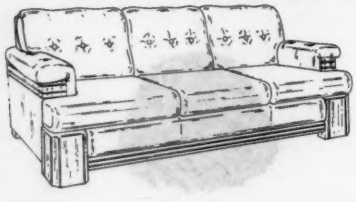
267,131
PAINT ROLLER
Kiyoshi Hori, Suita, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Jun. 19, 1981, Ser. No. 275,228
Claims priority, application Japan, Dec. 19, 1980, 55-53455
Term of patent 14 years
Int. Cl. D4—*04;* D8—*05*
U.S. Cl. D4—38.1

267,132
PAINT ROLLER
Kiyoshi Hori, Suita, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Jun. 19, 1981, Ser. No. 275,223
Claims priority, application Japan, Dec. 19, 1980, 55-53450
Term of patent 14 years
Int. Cl. D4—*04;* D8—*05*
U.S. Cl. D4—381

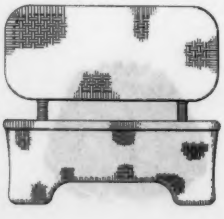
267,133
CHAIR
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Jul. 8, 1980, Ser. No. 166,959
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—57



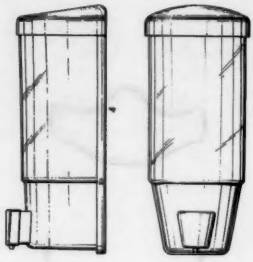
267,134
SOFA
Deborah Nelson, Knoxville, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed May 1, 1980, Ser. No. 145,785
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



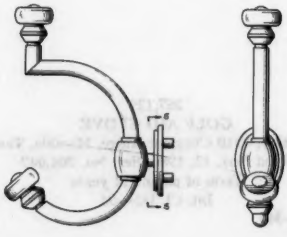
267,135
CHAIR
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Jun. 25, 1980, Ser. No. 162,721
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—78



267,136
DISPENSER FOR LIQUIDS OR THE LIKE
Stewart Banks, Milford, England, assignor to Appor Limited, Derby, England
Filed Mar. 12, 1981, Ser. No. 242,869
Claims priority, application United Kingdom, Sep. 13, 1980, 80996548
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95



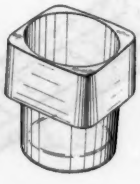
267,137
GARMENT HOOK
Lothar L. Mayer, 136 Fox Meadow Rd., Scarsdale, N.Y. 10583
Filed Dec. 9, 1980, Ser. No. 214,670
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—122



267,138
PERIODICAL SHELF FOR LIBRARY UNIT
Frederick J. Moriarty, Worcester, and Edmund T. Paquette, Shrewsbury, both of Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Apr. 17, 1980, Ser. No. 141,163
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—132

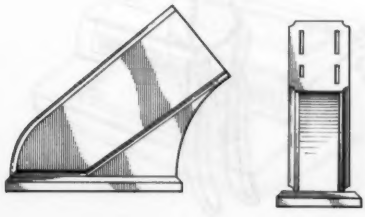
267,139
TABLE
Donald E. Hanaford, Phoenix, Ariz., assignor to Arthur E. Thomson, Glendale, Ariz.
Filed Apr. 25, 1980, Ser. No. 143,615
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

267,140
BATHROOM TUMBLER
Bruce R. Thompson, 32 Shakespeare Ave., Tranmere, South Australia, Australia
Filed Feb. 13, 1980, Ser. No. 121,248
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—6



267,141
COASTER FOR A BEVERAGE CAN
Ralph W. Meldrum, Jr., 7465 Layton St., Cucamonga, Calif. 91730
Filed Dec. 22, 1980, Ser. No. 218,534
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—45

267,142
SLANTED HOLDER FOR CUTLERY
Ross Pollard, Amesbury, Mass., assignor to Towle Manufacturing Company, Boston, Mass.
Filed Dec. 9, 1980, Ser. No. 214,488
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74

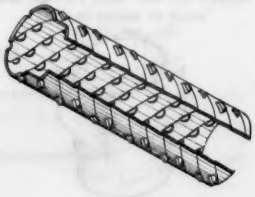


267,143
FOOD SUPPORT
Julie M. Gessing; Dennis Gessing, both of 1226 S. Bedford #6, Los Angeles, Calif. 90035; John F. Matherly, 931 Pavillion Dr., Creve Coeur, Mo. 63141, and Ferman Ansel, 434 Weld County Rd. 16½, Longmont, Colo. 80501
Filed Apr. 28, 1980, Ser. No. 145,579
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—76

267,144
PRUNER
Christopher R. B. Harrison, Porthcawl, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, High Wycombe, England
Filed Feb. 21, 1980, Ser. No. 123,447
Claims priority, application United Kingdom, Aug. 29, 1979, 991347
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5

267,145
STRAP TIGHTENER AND CUTTER
Hogara Kaneko, 3-2-302, Zengyo Danchi, Fujisawa, Japan (215)
Filed Mar. 28, 1980, Ser. No. 135,099
Claims priority, application Japan, Sep. 28, 1979, 54-40824
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—51

267,146
ABRADING TOOL BLADE
Robert F. West, West Simsbury, and Richard E. Ziel, Cheshire, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Dec. 21, 1978, Ser. No. 971,932
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—90



267,147

GRIP FOR BICYCLES, MOTORCYCLES OR THE LIKE

James H. Jannard, Laguna Niguel, Calif., assignor to Oakley, Inc., Laguna Hills, Calif.

Filed Dec. 8, 1980, Ser. No. 214,181

Term of patent 14 years

Int. Cl. D12—*11*

U.S. Cl. D8—303

267,148

BLIND NAIL

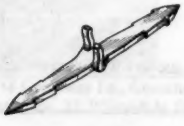
Philip W. Smith, 1414 Appleton Cir., Medford, Oreg. 97501

Filed May 22, 1981, Ser. No. 266,232

Term of patent 14 years

Int. Cl. D8—*08*

U.S. Cl. D8—389



267,149

PACKAGING CONTAINER FOR SYRUP OR THE LIKE

Robert B. Whorton, III, Spartanburg, S.C.; Samuel C. Crosby, Jr., Decatur, Ga.; Frank M. Iannelli, Spartanburg, S.C.; James Denmark, Ilkley, and Edward L. Jeans, Ledbury, both of England, assignors to Tannetics, Inc., Erie, Pa.

Filed Jul. 2, 1979, Ser. No. 53,949

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—370

267,150

TEAR STRIP PACKAGING CONTAINER

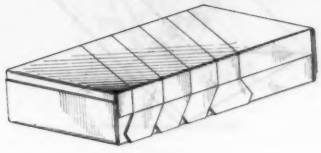
William D. Kinsell, Jr., Westlake, Ohio, assignor to SCM (Canada) Limited, Don Mills, Canada

Filed Feb. 8, 1979, Ser. No. 10,380

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—416



267,151

TYPEWRITER

Gordon P. Bruce, New Milford; David C. Danielson, Rowayton, both of Conn.; Robert E. Griffith, Lexington, Ky.; Allen D. Hawthorne, New Canaan, Conn.; Jeffrey L. Quedenfeld, Bridgeport, Conn., and Paul F. Siegel, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

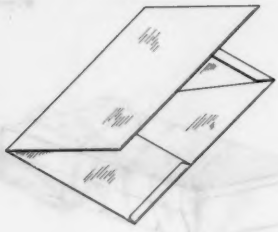
Filed May 1, 1980, Ser. No. 145,545

Term of patent 14 years

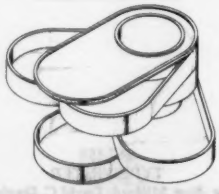
Int. Cl. D18—*01*

U.S. Cl. D18—1

267,152
POCKET PORTFOLIO
John J. Nerlinger, Jr., Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Apr. 11, 1980, Ser. No. 139,370
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—3

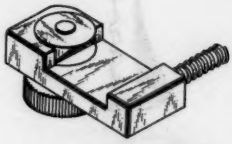


267,153
DESK RECEPTACLE FOR WRITING INSTRUMENTS AND OFFICE SUPPLIES OR THE LIKE
Samuel Lebowitz, New York, N.Y., assignor to Ketcham & McDougall, Roseland, N.J.
Filed Oct. 28, 1980, Ser. No. 201,635
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77

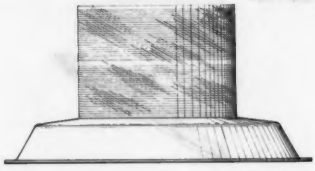


267,154
PROBE COVER
Ilhan M. Bilgutay, 837 Harbor Island, Clearwater, Fla. 33515
Filed Aug. 8, 1980, Ser. No. 176,415
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—60

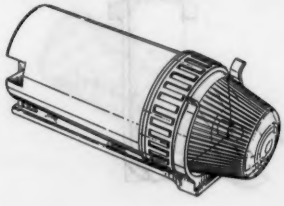
267,155
PRESSURE-SENSITIVE CALIPER ATTACHMENT
Jack P. McClung, 12117 Orange Dr., Whittier, Calif. 90601
Filed Aug. 25, 1980, Ser. No. 182,275
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—74



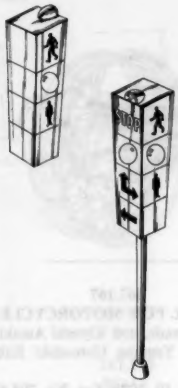
267,156
WARNING LIGHT WITH CYLINDRICAL LENS
Charles W. Phelps, Deep River, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.
Filed Mar. 31, 1980, Ser. No. 135,458
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—114



267,157
COMBINED STROBELAMP AND HOLDER
Chan M. Kong, 58 Pau Chung St., Tokwawan, Kowloon, Hong Kong
Filed Aug. 25, 1980, Ser. No. 181,211
Claims priority, application United Kingdom, May 23, 1980, 995-003
Term of patent 14 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114

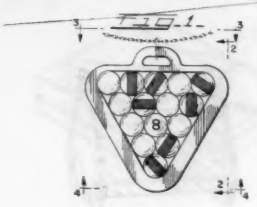


267,158
SEMAPHORE
Humberto A. Lopez, Mexico City, Mexico
Filed Aug. 7, 1978, Ser. No. 932,041
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—115

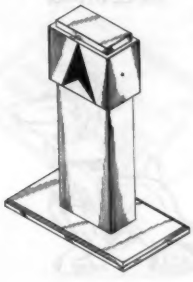


267,159
ADJUSTABLE NECKLACE OR BRACELET
Margaret Borofsky, 14 Greenway La., Greenfield, Mass. 01301, and Robert L. Borofsky, 22 Wilsondale St., Dover, Mass. 02030
Continuation-in-part of Ser. No. 183,009, Sep. 2, 1980. This application Mar. 26, 1981, Ser. No. 248,037
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—5

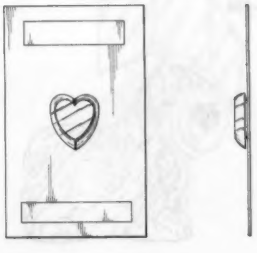
267,160
POCKET BILLIARDS RACK ORNAMENT
Jeanne F. Tomasello, 6266 Niagara, Chicago, Ill. 60631
Filed Apr. 1, 1980, Ser. No. 136,280
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81



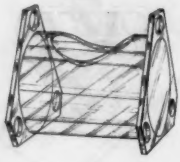
267,161
DESK ORNAMENT
Bert A. Goldman, 1608 Ilchester Ct., Greensboro, N.C. 27408
Filed Sep. 11, 1980, Ser. No. 186,173
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131



267,162
ARTIFACT PLAQUE
Sylvester Buschmann, Vienna, Mo. 65582
Filed Jul. 20, 1979, Ser. No. 59,336
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133



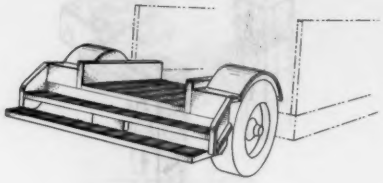
267,163
CONTAINER FOR PLANTS, FISH OR THE LIKE
Kevin M. Murray, 143(I) N. Pacific St., San Marcos, Calif. 92069
Filed Oct. 27, 1980, Ser. No. 201,358
Term of patent 14 years
Int. Cl. D11—*02;* D30—*02*
U.S. Cl. D11—145



267,164
FIGURINE OF A DOBERMAN PINSCHER
Jesus A. Santa-Eulalia Carvajales, and Javier B. Santa-Eulalia Carvajales, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.
Filed May 29, 1980, Ser. No. 154,326
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

267,165
FIGURINE OF AN OLDE ENGLISH SHEEPDOG
Jesus A. Santa-Eulalia Carvajales, and Javier B. Santa-Eulalia Carvajales, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.
Filed May 29, 1980, Ser. No. 154,588
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

267,166
SEMI-TRAILER
Eugene D. Sambucetti, and Keith L. Mathews, both of Woodland, Calif., assignors to Wesco Truck & Trailer Sales, Woodland, Calif.
Filed Aug. 27, 1979, Ser. No. 69,720
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—101



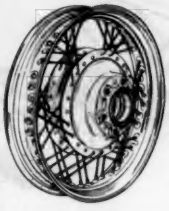
267,167
WHEEL FOR MOTORCYCLE
Toshiyuki Suzuki, Shimada, and Kiyoshi Amaki, Kaga, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Nov. 10, 1980, Ser. No. 205,696
Claims priority, application Japan, May 13, 1980, 55-18667
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

267,168
BODY PANEL FOR A MOTORCYCLE
Bruce D. Omholt, 1034 Holly Ave., Rohnert Park, Calif. 94928
Filed Mar. 10, 1980, Ser. No. 128,541
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

267,169
WHEEL FOR MOTORCYCLE

Toshiyuki Suzuki, Shimada, and Kiyoshi Amaki, Kaga, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

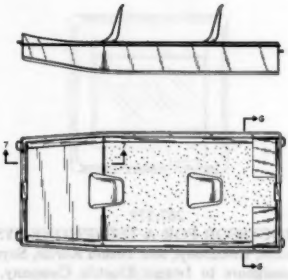
Filed Nov. 10, 1980, Ser. No. 205,703
Claims priority, application Japan, May 13, 1980, 55-18669
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



267,170
BOAT

Nancey J. Coulter, P.O. Box 626, Henryetta, Okla. 74437

Filed Jun. 30, 1980, Ser. No. 163,995
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—314



267,171
AIRPLANE

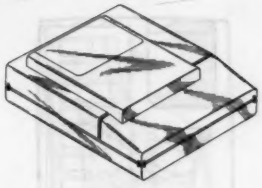
Perry B. Johnson, 169 N. Main St., Paterson, N.J. 07522

Division of Ser. No. 929,854, Jul. 31, 1978, Pat. No. Des. 259,713. This application May 27, 1980, Ser. No. 153,066
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—326

267,172
TAPE RECORDING AND PLAYBACK APPARATUS

John H. Pemberton, 9 Park View, Needingworth, Cambridge, PE17 3TJ, England

Filed Oct. 11, 1979, Ser. No. 83,786
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2



267,173
TELEPHONE SWITCHBOARD HOUSING

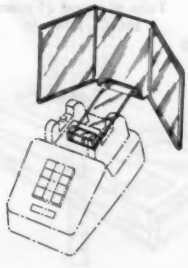
Thomas Georgopulos, Roselle, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,337
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58

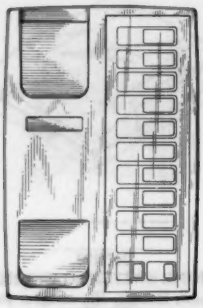
267,174
TELEPHONE ATTACHMENT

Dallas C. Fox, 4802 Old Springfield Rd., Vandalia, Ohio 45377, and Richard J. Raterman, 209 Oakview Dr., Kettering, Ohio 45429

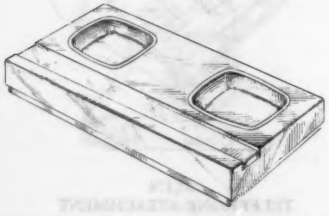
Filed Aug. 11, 1980, Ser. No. 177,202
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—59



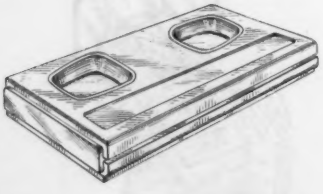
267,175
WALL TELEPHONE BASE HOUSING
George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 19s0, Ser. No. 220,330
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



267,176
TELEPHONE INSTRUMENT BASE HOUSING
George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 1980, Ser. No. 220,333
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

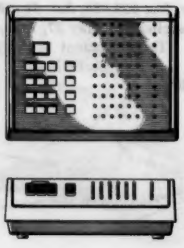


267,177
TELEPHONE INSTRUMENT BASE
George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 1980, Ser. No. 220,339
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

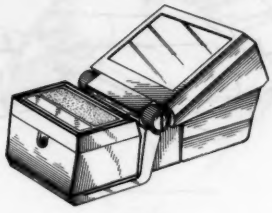


267,178
TELEPHONE HANDSET
Lee P. Mona, North Point, Hong Kong, assignor to Bondwell Electronics Ltd., Kowloon, Hong Kong
Filed Feb. 10, 1981, Ser. No. 233,053
Claims priority, application United Kingdom, Aug. 28, 1980, 80996318
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63

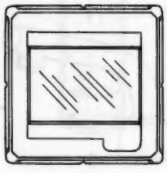
267,179
CALL PROCESSOR FOR A TELEPHONE SYSTEM
Ryoji Yamaguchi, Kokubunji, and Toshio Kurita, Sayama, both of Japan, assignors to Iwatsu Electric Company, Limited, Tokyo, Japan
Filed Sep. 27, 1979, Ser. No. 79,427
Claims priority, application Japan, Apr. 20, 1979, 54-16256
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



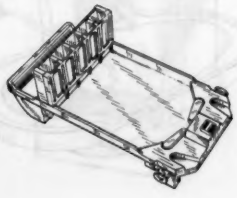
267,180
MICROFILM READER
Charles H. Kiesow, Mequon, and Allen E. Johnson, Hartford, both of Wis., assignors to Bell & Howell Company, Chicago, Ill.
Filed Nov. 10, 1980, Ser. No. 205,384
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—14



267,181
SLIDE FRAME
Jochen Jost, Halbe Höhe 20, 4300 Essen 1,, Fed. Rep. of Germany
Filed Aug. 12, 1980, Ser. No. 178,702
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 5 MR 578
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—26



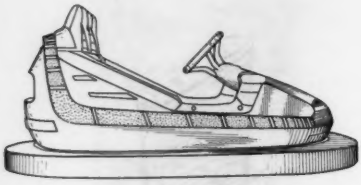
267,182
BALL STRIKING AND TARGET GAME APPARATUS
Yoshihiko Kato, Kasukabe, Japan, assignor to Ohkuma Seisakusho Co. Ltd., Japan
Filed Jan. 24, 1980, Ser. No. 117,842
Claims priority, application Japan, Aug. 27, 1979, 54-35811
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—10



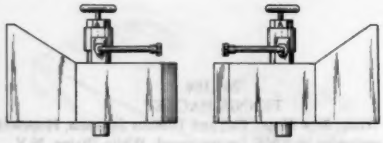
267,183
MANIPULATIVE WATER GAME HOUSING
Hiromi Takahashi, and Akio Tsuyuki, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 14, 1980, Ser. No. 167,761
Claims priority, application Japan, Jul. 20, 1979, 54-30503
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—12

267,184
TENNIS RACKET
Paul A. Witte, New Hope, Pa., and Thomas Johnson, Hopewell, N.J., assignors to AMF Incorporated, White Plains, N.Y.
Filed May 14, 1980, Ser. No. 149,847
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—212

267,185
AMUSEMENT BUMPER CAR
Christian Reverchon, Samois sur Seine, France, assignor to Societe Anonyme Gaston Reverchon & Ses Fils, Samois sur Seine, France
Filed Jul. 7, 1978, Ser. No. 923,083
Claims priority, application France, Apr. 7, 1978, 19
Term of patent 7 years
Int. Cl. D21—*03*
U.S. Cl. D21—250

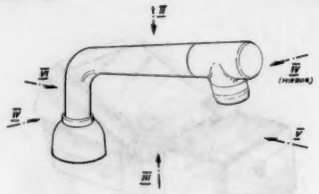


267,186
COMBINED VALVE ASSEMBLY AND FRAME HEAD FOR THE TRANSPORT AND HANDLING OF GAS CYLINDERS
Bengt G. Winqvist, Esbo, Finland, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed May 20, 1980, Ser. No. 151,753
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—20

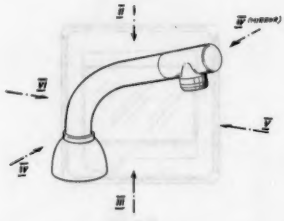


267,187
SINGLE HANDLE FAUCET AND THE LIKE
John P. Ronvik, Palos Heights, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Jun. 6, 1980, Ser. No. 157,124
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28

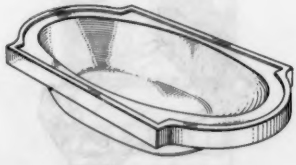
267,188
SPOUT
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Apr. 20, 1981, Ser. No. 255,533
Claims priority, application Australia, Nov. 20, 1980, 82662
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



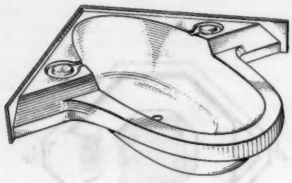
267,189
SPOUT
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Apr. 20, 1981, Ser. No. 255,537
Claims priority, application Australia, Dec. 4, 1980, 82769
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



267,190
BATHTUB
Jeffrey Harrison, Brookhouse, England, assignor to Kallista Baths, Inc., San Francisco, Calif.
Filed Nov. 20, 1980, Ser. No. 208,801
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

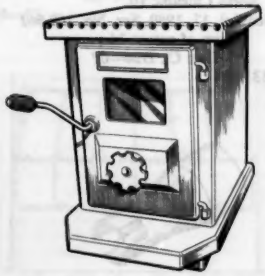


267,191
BATHTUB
Jeffrey Harrison, Brookhouse, England, assignor to Kallista Baths, Inc., San Francisco, Calif.
Filed Nov. 20, 1980, Ser. No. 208,803
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



267,192
STOVE
Michel D. Vincent, Avenue Saint-Pierre 31 Bis, 7000 Mons, Belgium
Filed May 8, 1981, Ser. No. 261,438
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—92

267,193
WOOD STOVE
Luigi C. Salce, Quinebaug, Conn., assignor to Woodstocker Heating Corp., Southbridge, Mass.
Filed Dec. 12, 1980, Ser. No. 215,517
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

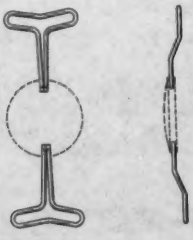


267,194
DRAFT CONTROL KNOB FOR A WOOD BURNING STOVE OR THE LIKE
Arthur L. Baker, R.D. #1,, Lewisbury, Pa. 17339
Filed Jan. 4, 1980, Ser. No. 109,472
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127

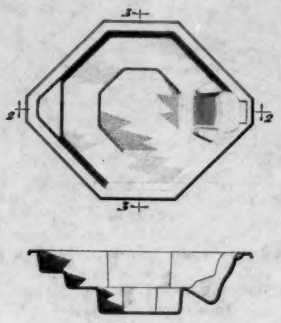
267,195
CEILING FAN COVER PLATE
Roy A. Gomes, 419 Latham La., East Williston, N.Y. 11596
Filed Feb. 9, 1981, Ser. No. 233,013
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

267,196
CEILING FAN COVER PLATE
Roy A. Gomes, 419 Latham La., East Williston, N.Y. 11596
Filed Feb. 9, 1981, Ser. No. 233,021
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

267,197
INTRAOCULAR LENS HAPTIC LOOP
Philip C. Hessburg, 1169 Three Mile Dr., Grosse Pointe Park, Mich. 48230
Filed May 5, 1980, Ser. No. 146,678
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—33



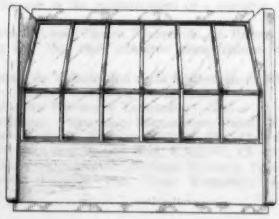
267,198
SPA
Rafael Huguet, 3760 NW. 80 St., Miami, Fla. 33147
Filed Aug. 27, 1980, Ser. No. 181,680
Term of patent 14 years
Int. Cl. D24—*02;* D25—*02*
U.S. Cl. D24—38



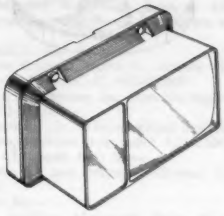
267,199
VIAL AND SOLUTION CONTAINER CONNECTING DEVICE
Elmer A. Koenig, Arlington Heights, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jul. 17, 1980, Ser. No. 169,562
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—53

267,200
ELASTIC BANDAGE WITH QUICK-LOCKING FASTENER
Ebbe G. Milding, Mölnlycke, Sweden, assignor to Mölnlycke AB, Goteborg, Sweden
Filed Jul. 12, 1979, Ser. No. 57,117
Term of patent 14 years
Int. Cl. D24—*04;* D2—*02*
U.S. Cl. D24—64

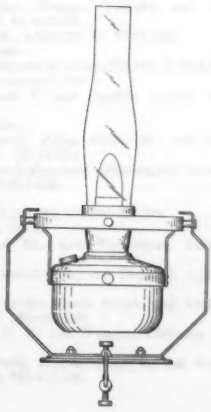
267,201
BUILDING
Glenn W. Monigle, Golden, Colo., assignor to The National Bank of Georgia, Atlanta, Ga.
Filed Sep 22, 1980, Ser. No. 189,263
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—33



267,202
RUNNING LIGHT FOR BOAT TRAILER AND THE LIKE
Virgil W. Potts, Harrisonville, Mo., assignor to Peterson Manufacturing Co., Grandview, Mo.
Filed May 2, 1980, Ser. No. 146,190
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—35



267,203
GIMBAL LAMP
Bruce B. Phillips, Toronto, Canada, assignor to Phillips Lighting Specialists Ltd., Toronto, Canada
Filed Sep. 28, 1979, Ser. No. 79,805
Claims priority, application Canada, May 2, 1979, 02-05-79-2
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—60

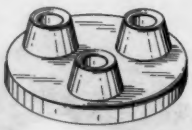


267,204

CIGARETTE EXTINGUISHER

Harry C. Hagman, 6122 Portland Ave., Minneapolis, Minn. 55417

Filed Aug. 22, 1979, Ser. No. 68,574
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—08

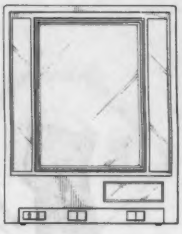


267,205

COMBINED LIGHTED MIRROR AND DIGITAL CLOCK

Ronald Weinhart, Encino, Calif., assignor to Hartman Products, Hawthorne, Calif.

Filed Sep. 8, 1980, Ser. No. 185,377
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—67



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TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF DECEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Cale, Albert D., Jr.; and Leonard, Charles A., 4,362,667, Cl. 548-557.000.

A/S Akers Mek. Verksted: *See*—
Spink, Ian R., 4,362,438, Cl. 405-195.000.

A/S Kongsberg Vapenfabrikk: *See*—
Grongstad, Oddvar, 4,362,287, Cl. 248-563.000.

AB CASCO: *See*—
Lindstrom, Tom S. C.; and Westman, Lennart H., 4,362,600, Cl. 162-55.000.

Abe, Atsushi; Ogawa, Hisahito; Nishikawa, Masahiro; Sekido, Satoshi; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing a gas sensing device. 4,362,765, Cl. 427-38.000.

Abe, Fumiyoshi: *See*—
Tanaka, Shosuke; and Abe, Fumiyoshi, 4,363,048, Cl. 360-137.000.

Abe, Seikou: *See*—
Igashira, Toshihiko; Yoshida, Hitoshi; Nomura, Ken; and Abe, Seikou, 4,362,142, Cl. 123-549.000.

Abel, William A.: *See*—
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,362,181, Cl. 137-68.00R.

Abele, Manlio, to New York University. Ultrasonic diagnostic apparatus. 4,362,058, Cl. 73-599.000.

Abex Corporation: *See*—
Frank, Earl E., 4,362,282, Cl. 246-468.000.

Abiko, Kenji: *See*—
Kimura, Hiroshi; Abiko, Kenji; Sato, Takashi; Yoshii, Isamu; Watanabe, Sadao; and Takei, Yutaka, 4,362,581, Cl. 148-31.550.

ABL Engineering Ltd.: *See*—
Driedger, Klaus U., 4,362,453, Cl. 414-268.000.

Abo, Toshimi; and Hosaka, Akio, to Nissan Motor Company, Limited. Malfunction preventing system for a microcomputer system. 4,363,092, Cl. 364-200.000.

Abo, Washohati: *See*—
Seino, Junzaburo; Ikeda, Hiroshi; Abo, Washohati; Minami, Iwao; and Fuji, Joji, 4,362,273, Cl. 239-128.000.

Abraham, Kuzhikalail M., to EIC Corporation. Electrolyte. 4,362,794, Cl. 429-196.000.

Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E. Process for producing high-purity gallium. 4,362,560, Cl. 75-63.000.

Accu-Back, Inc.: *See*—
Ross, Robert M.; and Kristof, George M., 4,362,334, Cl. 297-230.000.

Acme Highway Products Corporation: *See*—
Kerschner, James J., 4,362,428, Cl. 404-64.000.
Puccio, Guy S.; and Kerschner, James J., 4,362,429, Cl. 404-68.000.

Adair, Edwin L. Method of treating collected mammal semen and separating sperm into X Y components. 4,362,246, Cl. 209-3.300.

Adeka Argus Chemical Co., Ltd.: *See*—
Minagawa, Motonobu; and Nakahara, Yutaka, 4,362,830, Cl. 524-101.000.
Ohzeki, Toshio; Akutsu, Mitsuo; and Semba, Takanori, 4,362,831, Cl. 524-102.000.

Adidas Fabrique de Chausseurs de Sport: *See*—
Boissiere, Guy, 4,362,518, Cl. 441-60.000.

Adler, Franklin P.: *See*—
Stark, Marvin; and Adler, Franklin P., 4,362,111, Cl. 105-247.000.

Adolph, Erich; Bayrak, Unal; Prohl, Robert; and Stecker, Walter, to Siemens Aktiengesellschaft. Electrical switch apparatus. 4,362,914, Cl. 200-144.00B.

AEL Microtel, Ltd.: *See*—
Froese, Abram; Onotera, Larry Y.; Ahmed, Muhammad J.; and Liebelt, Alvin, 4,363,131, Cl. 455-42.000.

Agar, Joram; and Anderson, Gerald, to Redland Automation Limited. Apparatus for use in the measurement of a variable. 4,362,048, Cl. 73-32.00A.

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Montmory, Robert, 4,362,271, Cl. 239-2.00R.

Agency of Industrial Science & Technology: *See*—
Ikari, Yoshikatsu; Yokoyama, Shiyoichiro; Katoh, Keisuke; Itaya, Ryutaro; and Kaga, Toshio, 4,362,571, Cl. 127-55.000.
Kaneko, Hiroko; and Nozaki, Ken, 4,362,791, Cl. 429-101.000.
Torigai, Eiichi; Wakabayashi, Noboru; Kawami, Yoji; Kamijo, Eiji; Nishimoto, Tatsuya; and Tani, Katsuhito, 4,362,647, Cl. 252-425.300.

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Stemme, Otto; Wagensonner, Eduard; and von Fischern, Bernhard, 4,362,259, Cl. 226-123.000.

Agnew, David G.; and Cohn-Sfetcu, Sorin, to Northern Telecom Limited. Detection of tones in sampled signals. 4,363,100, Cl. 364-484.000.

Aharoni, Shaul M.; and Wasserman, Edel, to Allied Corporation. Adducts of polyamide and perfluoro-dicarboxylic acid. 4,362,851, Cl. 525-420.000.

Ahmed, Muhammad J.: *See*—
Froese, Abram; Onotera, Larry Y.; Ahmed, Muhammad J.; and Liebelt, Alvin, 4,363,131, Cl. 455-42.000.

Ahrens, Robert H., to Schwaab, Inc. Variable impression hand stamp. 4,362,101, Cl. 101-327.000.

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Ford, Michael E.; and Johnson, Thomas A., 4,362,886, Cl. 564-479.000.

Aizawa, Masanori: *See*—
Yabe, Kenji; Asakura, Masayoshi; Sano, Hiroki; and Aizawa, Masanori, 4,362,775, Cl. 428-213.000.

Ajdukovic, Djordje: *See*—
Bharucha, Kekhusroo R.; Tin, Kam C.; Ajdukovic, Iva; and Ajdukovic, Djordje, 4,362,746, Cl. 424-330.000.

Ajdukovic, Iva: *See*—
Bharucha, Kekhusroo R.; Tin, Kam C.; Ajdukovic, Iva; and Ajdukovic, Djordje, 4,362,746, Cl. 424-330.000.

Akerson, John R. Brush cutter. 4,361,959, Cl. 30-231.000.

Akita, Shoji: *See*—
Yamaguchi, Yoshihiro; Takatsuka, Kouro; Murakami, Shohei; Ogawa, Rikuo; Yamada, Yoshiro; Yokoyama, Tadamasa; and Akita, Shoji, 4,362,040, Cl. 72-201.000.

Akita, Yoshio; Maruyama, Toshinori; and Muto, Katsuya, to Nippondenso Co., Ltd. Voltage regulator for vehicles. 4,362,982, Cl. 320-64.000.

Akita, Yoshio: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Minura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,362,983, Cl. 322-28.000.

Akiyama, Nobuyuki: *See*—
Koizumi, Mituyoshi; Akiyama, Nobuyuki; and Oshima, Yoshimasa, 4,362,389, Cl. 356-401.000.

Aktiebolaget Electrolux: *See*—
Blomberg, Peter E.; Boren, Karl G.; and Ostergren, Axel H., 4,362,029, Cl. 62-497.000.
Carlsson, Karl L., 4,362,219, Cl. 177-245.000.

Akune, Toshiyuki: *See*—
Nakanishi, Teruyuki; Akune, Toshiyuki; Kusaba, Takashi; and Ehiro, Takashi, 4,362,041, Cl. 72-221.000.

Akutsu, Mitsuo: *See*—
Ohzeki, Toshio; Akutsu, Mitsuo; and Semba, Takanori, 4,362,831, Cl. 524-102.000.

Akzona, Inc.: *See*—
Hof, Craig R.; and Ulin, Roy A., 4,362,645, Cl. 252-408.100.
Ohnishi, Tatsuo; Uemura, Takeshi; and Nakajima, Teruo, 4,362,078, Cl. 83-862.000.
Rice, Charles M., 4,362,009, Cl. 57-86.000.

Alafandi, Hamid: *See*—
Stamires, Dennis; and Alafandi, Hamid, 4,362,652, Cl. 252-453.000.

Alco Standard Corporation: *See*—
Luebke, Clement J.; and Daniels, Lowell W., 4,362,148, Cl. 126-369.000.

Allen, Arthur D.: *See*—
Rastogi, Laxmi K.; Allen, Arthur D.; and Tsing, John Y. H., 4,362,269, Cl. 236-14.000.

Allen, Herman. Shock-absorbing cable anchor for mobile equipment. 4,362,288, Cl. 248-613.000.

Allibert S.A.: *See*—
Cornou, Jean, 4,362,244, Cl. 206-507.000.

Allied Corporation: *See*—
Aharoni, Shaul M.; and Wasserman, Edel, 4,362,851, Cl. 525-420.000.
de Antonis, Ferdinand A.; and Degrassi, Alfieri, 4,362,585, Cl. 156-62.200.
Diamond, Steven E.; Mares, Frank; and Szalkiewicz, Andrew, 4,362,671, Cl. 260-465.50R.
Kuo, Vincent H. S.; and Wamser, Christian A., 4,362,643, Cl. 252-175.000.
Pendlebury, David; Rowan, Hugh H.; and Buyalos, Edward J., 4,362,852, Cl. 525-437.000.

Allis-Chalmers Corporation: *See*—
Hanaway, Roger D.; James, Larry R.; and Busboom, Garry W., 4,362,005, Cl. 56-14.600.

Allison Manufacturing Company: *See*—
Dimiceli, Michael A., 4,363,084, Cl. 362-250.000.

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Aluminum Company of America: *See*—
Hawkins, Ronald G.; and DeHart, Dwain L., 4,362,352, Cl. 339-248.00S.

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Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Kopse, Odon; Amaya, Nestor R.; Schlagenhauf, Josef; and Locher, Johannes, 4,362,050, Cl. 73-119.00A.

American Can Company: *See*—
Kuchenbecker, Morris W., 4,362,245, Cl. 206-621.000.

American Commercial Barge Line Co.: *See*—
Koch, Robert C., Jr.; and Hickmann, Horst R., 4,362,118, Cl. 114-201.00R.

American Cyanamid Company: *See*—
Perez, Jesus W.; and Wang, Samuel S., 4,362,559, Cl. 75-53.000.

American Dental Association Health Foundation, The: *See*—
Bowen, Rafael L., 4,362,889, Cl. 560-221.000.

American Standard Inc.: *See*—
Lyons, Michael D., 4,362,516, Cl. 440-85.000.
Parkison, Richard G.; Fischer, Armin O.; and Kaussner, John C., 4,362,186, Cl. 137-625.170.

AMF Incorporated: *See*—
Rose, John A.; and Dyer, Keith, 4,362,115, Cl. 112-262.300.
Unger, Robert P., 4,363,016, Cl. 337-56.000.

Amgar, Abraham, to Hosem Reliable Protection System Ltd. Door locking device. 4,362,034, Cl. 70-108.000.

Amick, James A., to Exxon Research & Engineering Co. Method of making solar cell with wrap-around electrode. 4,361,950, Cl. 29-572.000.

Amiot, Jacques H. J., to Moulinex, Societe Anonyme. Domestic electrical food processing appliance. 4,362,277, Cl. 241-37.500.

AMP Incorporated: *See*—
Cobaugh, Robert F.; and Graeff, Norwood C., 4,362,353, Cl. 339-258.00P.
Grabbe, Dimitry G., 4,362,902, Cl. 174-52.0FP.
Williams, Russell H.; and Meeham, Robert F., 4,362,356, Cl. 350-96.200.

Amstar Corporation: *See*—
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzutto, Anthony B., 4,362,757, Cl. 426-599.000.

Anan, Hiromichi: *See*—
Sudo, Sumio; Anan, Hiromichi; and Yamada, Masayuki, 4,362,463, Cl. 415-129.000.

Ancel Products, Inc.: *See*—
Meade, Albert J., 4,362,289, Cl. 248-656.000.

Ancos Co., Ltd.: *See*—
Hashimoto, Yasuyuki, 4,362,410, Cl. 401-67.000.

Anderson, Arthur E.: *See*—
Vaerewyck, Eugene G.; and Anderson, Arthur E., 4,363,061, Cl. 361-31.000.

Anderson, Gerald: *See*—
Agar, Joram; and Anderson, Gerald, 4,362,048, Cl. 73-32.00A.

Anderson, Harry B., to Eaton Corporation. Miniature precision snap action switch having operating lever providing large overtravel. 4,362,916, Cl. 200-153.00T.

Anderson, Howard W.; and Champ, Robert B., to International Business Machines Corporation. Hydrazone and pyrazoline or acetosol yellow containing charge transport layer, photoconductor and electrophotographic process using the same. 4,362,798, Cl. 430-59.000.

Anderson, Leroy E., to Standex International Corporation. Air make-up unit. 4,362,922, Cl. 219-369.000.

Anderson, Ralph L., to Scott Paper Company. Flushable premoistened wiper. 4,362,781, Cl. 428-291.000.

Andersson, Bengt; and Tanner, Olof, to KemaNord AB. Foam composite material impregnated with resin. 4,362,778, Cl. 428-240.000.

Andersson, John O.: *See*—
Eriksson, Torsten L.; Andersson, John O.; and Nystrom, Olle, 4,362,500, Cl. 431-352.000.

Andrews, Merritt B., to United Technologies Corp. Centrifugal fuel pump with automatically switched jet injection. 4,362,474, Cl. 417-80.000.

Andrieu, Louis; Bernard, Jean; Beyl, Jean; LeFaou, Daniel; Peyre, Henri; and Veniat, Jacky, to Look, S.A. Toe abutment member for a ski binding. 4,362,313, Cl. 280-628.000.

Anetseder, Leopold: *See*—
Ellerstorfer, Herbert; and Anetseder, Leopold, 4,362,126, Cl. 119-1.000.

Anjyu, Shinji: *See*—
Ohtsuki, Tadashi; Kazami, Shinichi; Anjyu, Shinji; and Tanaka, Masato, 4,363,049, Cl. 360-13.000.

Anstey, Nigel A.: *See*—
Taner, Mehmet T.; Koehler, Fulton; Anstey, Nigel A.; and Castelberg, Michael J., 4,363,113, Cl. 367-63.000.

Anton, John C.; and Bush, Edward J., to United States of America, Army. Method of fabricating a ducted blanket for a rotor spar. 4,362,588, Cl. 156-219.000.

Antonucci, Paul, to Buffalo China, Inc. Support for ceramic ware article during firing. 4,362,507, Cl. 432-259.000.

Aoshima, Terutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Rice cooker. 4,362,923, Cl. 219-441.000.

Aotsuka, Yasuo: *See*—
Mihara, Yuji; Ikeda, Tadashi; Takei, Haruo; Okazaki, Masaki; and Aotsuka, Yasuo, 4,362,813, Cl. 430-550.000.

Appleton Electric Company: *See*—
Bolante, Jay J., 4,362,284, Cl. 248-205.00R.

Arai, Satoshi, to Kabushiki Kaisha Daini Seikosha. Driving circuit for a stepping motor. 4,362,981, Cl. 318-696.000.

Arai, Yasuyuki: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,362,772, Cl. 428-36.000.

Arakawa, Akio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of sensing abnormality of weft detecting device in loom. 4,362,190, Cl. 139-370.200.

Arco Industries Ltd.: *See*—
Reiling, Walter S.; Tsui, Kwok W.; and Yuen, Johnny S. C., 4,361,981, Cl. 46-228.000.

Arends, Harm J.: *See*—
Zinnen, Norbert; Mirtain, Henri J.; and Arends, Harm J., 4,362,201, Cl. 152-209.00R.

Argentar, Harold: *See*—
Brauer, Gerhard M.; Argentar, Harold; and Stansbury, Jeffrey W., 4,362,510, Cl. 433-199.000.

Arima, Sumito: *See*—
Imai, Hiroto; and Arima, Sumito, 4,362,104, Cl. 101-349.000.

Ark-Les Corporation: *See*—
Boebel, Theodore D.; Walkup, William B.; and Mitchell, Edward B., 4,362,910, Cl. 200-5.0EA.
Mazzola, Ralph; and Leaf, Harry V., 4,361,942, Cl. 29-33.00M.

Arkles, Barry C., to Petrarch Systems, Inc. Silacrown ethers, method of making same, and use as phase-transfer catalysts. 4,362,884, Cl. 556-446.000.

Armbrust, William D., to Kennametal Inc. Floating boring bar cartridge. 4,362,445, Cl. 408-182.000.

Armstrong, Alfred, to Crathco, Inc. Multi-bowl beverage dispensers. 4,362,028, Cl. 62-390.000.

Armstrong, Peter R., to Electric Power Research Institute, Inc. Heat measuring apparatus and method for use in a continuous fluid stream. 4,362,404, Cl. 374-39.000.

Armstrong World Industries, Inc.: *See*—
Otthofer, Jacob A., Jr., 4,362,808, Cl. 430-308.000.

Arnaud, Ronald L. Storage container and method of making same. 4,361,947, Cl. 29-416.000.

Arsac, Andre, to Rhone-Poulenc-Textile. Process of silvering articles having a base of polyamides. 4,362,779, Cl. 428-263.000.

Arthur, Lawrence E. Karate protective equipment. 4,361,912, Cl. 2-18.000.

ASA S.A.: *See*—
Crouzet, Henri, 4,362,010, Cl. 57-279.000.

Asahi Glass Company, Ltd.: *See*—
Yamabe, Masaaki; Munekata, Seiji; and Samejima, Shunichi, 4,362,672, Cl. 260-544.00F.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ishii, Haruo, 4,362,374, Cl. 354-242.000.

Asahi, Taro: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Minura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,362,983, Cl. 322-28.000.

Asakura, Masayoshi: *See*—
Yabe, Kenji; Asakura, Masayoshi; Sano, Hiroki; and Aizawa, Masanori, 4,362,775, Cl. 428-213.000.

Asano, Mitsuru: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,362,495, Cl. 425-376.00A.

Asberg, Sture L., to SKF Nova AB. Device for proving a friction joint. 4,362,411, Cl. 403-5.000.

Asdigian, George, to UOP Inc. Mercaptan extraction process with recycled alkaline solution. 4,362,614, Cl. 208-235.000.

Ashida, Shigeki: *See*—
Fujita, Hiroyuki; Ashida, Shigeki; Taguchi, Yoshiaki; and Sakai, Masami, 4,362,760, Cl. 426-641.000.

Asmus, Clifford V.: *See*—
Cornelius, Dennis A.; Asmus, Clifford V.; and Sternberg, Moshe M., 4,362,818, Cl. 435-223.000.

Astech: *See*—
Fage, Etienne, 4,362,015, Cl. 60-226.00A.

Ateliers des Charmilles S.A.: *See*—
Frei, Charles, 4,362,989, Cl. 324-71.0CP.

Atlantic Building Systems, Inc.: *See*—
Ellison, Burlan E.; Spranca, Harry P.; and Hooper, Christopher C., 4,361,998, Cl. 52-520.000.

Aurand, James A., to Broadcast Electronics, Inc. Power amplifier tank circuit. 4,363,000, Cl. 330-56.000.

Automation Industries, Inc.: *See*—
Stephenson, Roger C.; and Chaput, Dale T., 4,362,348, Cl. 339-75.00M.

Automotive Environmental Systems, Inc.: *See*—
Story, Gene F.; and La Belle, John T., 4,362,924, Cl. 219-497.000.
Autzen, Horst: *See*—
Ohlinger, Manfred; Reichert, Hans; Vaeth, Guenter; Faulhaber, Friedrich R.; Autzen, Horst; Rudolf, Peter; and Werther, Joachim, 4,362,708, Cl. 423-634.000.
Axelsson, Rolf I., to Stal Refrigeration AB. Rotary compressor with variable built-in volume ratio. 4,362,472, Cl. 417-53.000.
Axinte, Gavril: *See*—
Necsoiu, Ion-Jan; Bratu, Polidor P.; Ghinea, Aurelian; and Axinte, Gavril, 4,362,066, Cl. 74-87.000.
B. F. Goodrich Company, The: *See*—
Ruppel, Donald B., 4,362,592, Cl. 156-402.000.
B. L. Downey Company, Inc.: *See*—
Downey, Bernard L., 4,362,128, Cl. 119-28.000.
Babcock, Frank H., III: *See*—
Wren, Fred H., Jr.; and Babcock, Frank H., III, 4,361,970, Cl. 36-106.000.
Babenko, Evgeny A.: *See*—
Bukrinsky, Anatoly M.; Rzheznikov, Julian V.; Shvyryaev, Jury V.; Tatarnikov, Viktor P.; Lapshin, Alexandr L.; Sanovich, Vladimir I.; Zlatin, David A.; Kuznetsov, Jury A.; and Babenko, Evgeny A., 4,362,693, Cl. 376-298.000.
Badische Corporation: *See*—
Berg, Gerald A.; Buchert, Hermann; Duffy, Steve R.; Harder, Richard E.; Higgs, E. R.; Hoblit, Louis D.; Ryffel, James R.; Smith, Walter P.; and Stenzel, Edwin L., 4,362,682, Cl. 264-143.000.
Baggaley, Keith H.: *See*—
Hindley, Richard M.; and Baggaley, Keith H., 4,362,892, Cl. 564-374.000.
Bahnsen, Heiner; and Rumpf, Dietrich, to Siemens Aktiengesellschaft. Device for cooling freshly-soldered circuit boards. 4,361,967, Cl. 34-151.000.
Bahr, Dietrich J.; Briska, Marian; and Schackert, Klaus, to International Business Machines Corporation. Process for producing a polymerized, heat-resistant lacquer. 4,362,843, Cl. 525-54.230.
Bailey, Alan C.; and Miller, Stephen B., to Corning Glass Works. Support member for an optical waveguide preform. 4,362,545, Cl. 65-169.000.
Bailey, William D.: *See*—
Brandon, William A., Jr.; and Bailey, William D., 4,362,774, Cl. 428-159.000.
Baisch, Herbert: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 4,362,196, Cl. 144-286.00R.
Baker, Bernard S.: *See*—
Maru, Hansraj C.; and Baker, Bernard S., 4,362,788, Cl. 429-13.000.
Baker, Hugh W. B.; Packham, Charles C.; and Welsh, Norman C., to Gillette Company, The. Toothbrushes. 4,362,174, Cl. 132-84.00R.
Baldwin-Gegenheimer Corporation: *See*—
MacPhee, John; and Barton, William W., 4,362,179, Cl. 137-3.000.
Baltz, Richard H.: *See*—
Hamill, Robert L.; Huff, Gerald L.; Baltz, Richard H.; and Seno, Eugene T., 4,362,881, Cl. 549-271.000.
Balzers Aktiengesellschaft: *See*—
Schadler, Walter, 4,362,125, Cl. 118-712.000.
Banfi, Jozsef; Lontay, Zoltan; Vadas, Zoltan; and Wenzel, Bela, to Energiagazdalkodasi Intezet. Steam generator using waste heat from glass furnace. 4,362,129, Cl. 122-7.00R.
Bange, Joseph B., to Western States Machine Company, The. Continuous centrifugal machine. 4,362,619, Cl. 210-360.100.
Banzai, Keiichiro: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Minura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,362,983, Cl. 322-28.000.
Baratti, Mario, to Samar, Import and Export, Inc. Replacement starting motor assembly. 4,362,065, Cl. 74-7.00A.
Barber, Gerald L. Speed bump. 4,362,424, Cl. 404-6.000.
Barbier, William J., to Sporlan Valve Company. Refrigeration control system for modulating electrically-operated expansion valves. 4,362,027, Cl. 62-197.000.
Barrett, Gary L., to GSE, Inc. Apparatus for measuring parking brake activating forces. 4,362,053, Cl. 73-121.000.
Barry, Leonard D. Rotary loader and storage system. 4,362,456, Cl. 414-334.000.
Barta, Kent S. Meat carcass sanitizing process. 4,362,753, Cl. 426-332.000.
Barthold, Robert G.; and Rublo-Medina, Oscar, to Siemens-Allis, Inc. Electric motor rotor with fitted vent spacers. 4,362,959, Cl. 310-64.000.
Bartlett, Keith G.: *See*—
Chen, Mung; Trutna, William R., Jr.; Watts, Michael P. C.; Bartlett, Keith G.; and Hillis, Gary, 4,362,809, Cl. 430-312.000.
Barton, William W.: *See*—
MacPhee, John; and Barton, William W., 4,362,179, Cl. 137-3.000.
BASF Aktiengesellschaft: *See*—
Grabhoefer, Herbert; and Weyland, Peter, 4,362,825, Cl. 521-172.000.
Ohlinger, Manfred; Reichert, Hans; Vaeth, Guenter; Faulhaber, Friedrich R.; Autzen, Horst; Rudolf, Peter; and Werther, Joachim, 4,362,708, Cl. 423-634.000.
Steiner, Gerd; Teschendorf, Hans-Juergen; Kreiskott, Horst; and Hofmann, Hans P., 4,362,727, Cl. 424-248.510.
BASF Wyandotte Corporation: *See*—
Davis, Pauls; and Wilson, Joe C., 4,362,644, Cl. 252-389.00R.
Bassett, James H.: *See*—
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Bast, Bernard J., to Bethlehem Steel Corporation. Expandable mandrel apparatus for manufacturing smooth-lined corrugated pipe. 4,362,489, Cl. 425-127.000.
Baston, Eric W., to Coventry Climax Limited. Industrial truck. 4,362,220, Cl. 180-68.500.
Battelle Memorial Institute: *See*—
Bechet, Louis, 4,363,023, Cl. 340-146.3SY.
Baudin, Pol; Collignon, Pierre; and Gillieaux, Claude, to BFG Glassgroup. Process of forming a multi-ply laminate. 4,362,587, Cl. 156-87.000.
Baumert, Jurgen: *See*—
Jupe, Christoph; Waldmann, Helmut; Baumert, Jurgen; and Schummer, Gunther, 4,362,604, Cl. 203-75.000.
Bay, Wilhelm: *See*—
Imhoff, Lothar; Hoppe, Walter; and Bay, Wilhelm, 4,361,973, Cl. 37-58.000.
Bayer Aktiengesellschaft: *See*—
Dhein, Rolf; Hentschel, Karl-Heinz; Nutzel, Karl; Morche, Klaus; and Schule, Wolfgang, 4,362,635, Cl. 252-56.00S.
Idel, Karsten; Freitag, Dieter; Bottenbruch, Ludwig; and Merten, Josef, 4,362,864, Cl. 528-388.000.
Jupe, Christoph; Waldmann, Helmut; Baumert, Jurgen; and Schummer, Gunther, 4,362,604, Cl. 203-75.000.
Kalk, Walter; Schundehutte, Karl H.; and Soll, Manfred, 4,362,874, Cl. 544-317.000.
Korber, Helmut; Tacke, Peter; Fahnler, Friedrich; Neuray, Dieter; and Heydenreich, Frieder, 4,362,846, Cl. 525-66.000.
Bayer, Franz: *See*—
Cordella, Johannes; Bayer, Franz; and Felbermayer, Erich, 4,362,206, Cl. 164-448.000.
Bayrak, Unal: *See*—
Adolph, Erich; Bayrak, Unal; Prohl, Robert; and Stecker, Walter, 4,362,914, Cl. 200-144.00B.
Beard, Harold. Waste water clarifier. 4,362,625, Cl. 210-521.000.
Beaudoin, John F.: *See*—
Stelling, Walter R., Jr.; Cummins, William A.; and Beaudoin, John F., 4,362,098, Cl. 101-219.000.
Bechet, Louis, to Battelle Memorial Institute. Electromagnetic device for measuring the speed of handwriting. 4,363,023, Cl. 340-146.3SY.
Beck, Martin H.: *See*—
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,362,498, Cl. 425-526.000.
Becker, Wayne A.: *See*—
Sen Gupta, Sisir K.; and Becker, Wayne A., 4,362,116, Cl. 112-265.200.
Beecham Group Limited: *See*—
Hindley, Richard M.; and Baggaley, Keith H., 4,362,892, Cl. 564-374.000.
Rogers, Norman H.; O'Hanlon, Peter J.; and Walker, Graham, 4,362,743, Cl. 424-283.000.
Veal, Kenneth T.; and Grinter, Trevor J., 4,362,880, Cl. 549-79.000.
BEI Electronics, Inc.: *See*—
Hafle, Ralph S., 4,362,358, Cl. 350-96.160.
Belart, Juan, to ITT Industries, Inc. Hydraulic brake system with an antiskid control apparatus. 4,362,339, Cl. 303-117.000.
Belfort, Gerard L. A., to P C U K Produits Chimiques Ugine Kuhlmann. Process for the preparation of basic oxazine dyestuffs. 4,362,873, Cl. 544-103.000.
Bell & Howell Company: *See*—
Stefansson, Rafn; and McManaman, Raymond M., 4,362,298, Cl. 271-236.000.
Bell, Michael: *See*—
Laube, Dennis; Hausch, Daniel E.; and Bell, Michael, 4,362,329, Cl. 296-26.000.
Bell, Roland G., to Taylor, Thomas Lee. Torch tip rebuilding tool. 4,362,446, Cl. 408-211.000.
Bell Telephone Laboratories, Incorporated: *See*—
Fraser, David B.; Kinsbron, Eliezer; and Vratny, Frederick, 4,362,597, Cl. 156-643.000.
Holmgren, John E.; Rosenberg, Aaron E.; and Upton, John W., 4,363,102, Cl. 364-513.000.
Presby, Herman M., 4,362,943, Cl. 250-459.100.
Belles, Benjamin P., to Standard Oil Company (Indiana). Method for continuous soluble polypropylene recovery from hydrocarbon polymerization media. 4,362,865, Cl. 528-500.000.
Belsky, Arkady A.: *See*—
Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E., 4,362,560, Cl. 75-63.000.
Bendix Corporation, The: *See*—
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,362,349, Cl. 339-89.00M.
Runkle, Dean E., 4,362,086, Cl. 91-391.00R.
Bentzen-Bilkvist, Ib; and Jacobson, Wayne M., to Dundee Cement Company; and Cyclonaire Corporation. Venturi barge unloading system. 4,362,442, Cl. 406-109.000.
Benveniste, Albert: *See*—
Richard, Christian; Kretz, Francis; and Benveniste, Albert, 4,363,103, Cl. 364-515.000.

Berens, George; Padovani, Frank L.; and Timony, Peter E., to Stauffer Chemical Company. Metal working lubricant and lubricant emulsion. 4,362,634, Cl. 252-49.500.

Berg, Gerald A.; Buchert, Hermann; Duffy, Steve R.; Harder, Richard E.; Higgs, E. R.; Hoblit, Louis D.; Ryffel, James R.; Smith, Walter P.; and Stenzel, Edwin L., to Badische Corporation. Chip-free staple fiber process. 4,362,682, Cl. 264-143.000.

Berglund, Sidney J.; and Matthews, Gary B., to Minnesota Mining and Manufacturing Company. Modular connector and protector. 4,362,347, Cl. 339-14.00R.

Bergman, Per G. Dismountable wheel-chair. 4,362,311, Cl. 280-242.0WC.

Bergwerksverband GmbH: *See*—
Glaesmann, Otto-Ernst; Meyer, Frank; and Marsch, Walter, 4,362,440, Cl. 405-269.000.

Bernard, Jean: *See*—
Andrieu, Louis; Bernard, Jean; Beyl, Jean; LeFaou, Daniel; Peyre, Henri; and Veniat, Jacky, 4,362,313, Cl. 280-628.000.

Bertone, Antonino; and Vannini, Paolo, to Centro Ricerche Fiat S.p.A. Motor vehicle hydraulic system. 4,362,019, Cl. 60-547.00A.

Bessay, Raymond: *See*—
Riollet, Gilbert; and Bessay, Raymond, 4,362,465, Cl. 415-144.000.

Bethlehem Steel Corporation: *See*—
Bast, Bernard J., 4,362,489, Cl. 425-127.000.
Egan, Walter D.; Boos, Roger T.; Byer, Robert L.; and DeFreez, Richard K., 4,362,388, Cl. 356-341.000.

Better Methods, Inc.: *See*—
Matkan, Josef; and Wright, Robert J., 4,362,764, Cl. 427-14.100.

Beyl, Jean: *See*—
Andrieu, Louis; Bernard, Jean; Beyl, Jean; LeFaou, Daniel; Peyre, Henri; and Veniat, Jacky, 4,362,313, Cl. 280-628.000.

BFG Glasgroup: *See*—
Baudin, Pol; Collignon, Pierre; and Gillieaux, Claude, 4,362,587, Cl. 156-87.000.

Bharucha, Kekhusroo R.; Tin, Kam C.; Ajdukovic, Iva; and Ajdukovic, Djordje, to Canada Packers Inc.; and Institute of Microbiology and Hygiene of the University of Montreal, The. Antiviral 1,2,3,4-tetrahydro-1,4-methanonaphthalene derivatives. 4,362,746, Cl. 424-330.000.

Bhatia, Chandrakant: *See*—
Bock, Thomas; Bhatia, Chandrakant; and Toman, George M., 4,362,113, Cl. 112-199.000.

Bieber, Gerold: *See*—
Boss, Franz; Bieber, Gerold; and Schachmann, Karlheinz, 4,362,017, Cl. 60-337.000.

Bier, Milan, to University Patents, Inc. Isoelectric focusing apparatus. 4,362,612, Cl. 204-301.000.

Biles, Don L.; and Richardson, A. Alan, to Silver Systems, Ltd. Silver recovery method. 4,362,608, Cl. 204-109.000.

Billings, William W.; Mitchell, James T.; and Luebrecht, Richard E., to United States of America, Navy. Overcurrent protection system. 4,363,064, Cl. 361-57.000.

Bings, Hubert: *See*—
Kruger, Jorg; Thome, Roland; Moritz, Dieter; Bings, Hubert; and Losert, Herbert, 4,362,701, Cl. 422-194.000.

Binninger, Robert E.: *See*—
Malcolm, Bruce G.; and Binninger, Robert E., 4,363,009, Cl. 333-177.000.

Bio Research, Inc.: *See*—
Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,362,699, Cl. 422-131.000.

Bird, Kenneth I. W.; and Thomas, Evan S., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Safety fuel admixture apparatus. 4,362,534, Cl. 44-62.000.

Bischoff, Robert F.: *See*—
Bushor, Ray E.; and Bischoff, Robert F., 4,362,342, Cl. 308-36.100.

Bishop, Martin T., to Westinghouse Electric Corp. Protective relay. 4,363,066, Cl. 361-85.000.

Bittihn, Rainer; Wagner, Armin; Randin, Jean-Paul; and Rosselet, Jean-Daniel, to Varta Batterie Aktiengesellschaft. Galvanic cell with solid electrolyte. 4,362,793, Cl. 429-191.000.

BJ-Hughes Inc.: *See*—
McFadden, Edward J., 4,361,940, Cl. 24-263.0DA.

Bjorkqvist, Lars-Goran: *See*—
Rastas, Jussi K.; Nyberg, Jens R.; Karpale, Kauko J.; and Bjorkqvist, Lars-Goran, 4,362,702, Cl. 423-41.000.

Black, David H. A.; Joyce, Robert H.; Daaboul, Fouad; and Le Van, Tiu, to Northern Telecom Limited. Mitigation of noise signal contrast in a digital speech interpolation transmission system. 4,363,122, Cl. 370-81.000.

Black & Decker Inc.: *See*—
Jinkins, Danny R., 4,361,929, Cl. 15-355.000.

Blanchard, Clarence E., to Outboard Marine Corporation. High performance stern drive unit. 4,362,514, Cl. 440-61.000.

Blanchard, Stanley J.: *See*—
Pollard, Brian W.; Perzley, William; and Blanchard, Stanley J., 4,362,978, Cl. 318-568.000.

Blanchart, Alain P. O.; Van Bogaert, Gilbert J. L.; De Brandt, Constantine W. M. V. A.; and Spaepen, Gustaaf J. F., to Electrochemische Energieconversie, N.V. Porous electrode. 4,362,790, Cl. 429-42.000.

Blazso, Eva: *See*—
Schneider, Gernot; Trinkler, Werner; Halder, Mathis; Blazso, Eva; de Vries, Jocob; Schurmann, Konrad; and Muntwyler, Hans, 4,362,990, Cl. 324-117.00R.

Bleuel, Walter: *See*—
Kallinke, Manfred; Bleuel, Walter; Hoehn, Wolfgang; and Heinrich, Kurt, 4,362,402, Cl. 368-317.000.

Blinman, Daryl J., to Minister for Public Works for the State of New South Wales. Cashmere combing machine. 4,362,173, Cl. 132-9.000.

Blok, Gerard A. E.: *See*—
Lodder, Bernhard; van Dongeren, Jan P.; and Blok, Gerard A. E., 4,362,323, Cl. 285-4.000.

Blomberg, Peter E.; Boren, Karl G.; and Ostergren, Axel H., to Aktiebolaget Electrolux. Absorption refrigerator boiler construction. 4,362,029, Cl. 62-497.000.

Blotenberg, Wilfried, to M.A.N. Uternehmensbereich G.H.H. Sterkrade. Method of intermediate cooling of compressed gases. 4,362,462, Cl. 415-1.000.

Board of Regents, University of Texas Systems: *See*—
Almond, Peter R., 4,362,940, Cl. 250-374.000.

Bocard, Christian; and Lemesre, Maurice, to Institut Francais du Petrole; and Societe Anonyme Cousin Freres. Special trawl net for collecting floating products. 4,362,631, Cl. 210-776.000.

Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., to Merck & Co., Inc. Method of treating edema and hypertension and pharmaceutical composition therefor in which the active ingredient comprises a novel substituted pyrazinyl-1,2,4-oxadiazole and a kaliuretic diuretic. 4,362,724, Cl. 424-246.000.

Bock, Thomas; Bhatia, Chandrakant; and Toman, George M., to Union Special Corporation. Mechanism generating helical/elliptical motion. 4,362,113, Cl. 112-199.000.

Boebel, Theodore D.; Walkup, William B.; and Mitchell, Edward B., to Ark-Les Corporation. Electrical switch. 4,362,910, Cl. 200-5.0EA.

Boehnlein, Bernard M., Sr.: *See*—
Frye, Robert S.; and Boehnlein, Bernard M., Sr., 4,362,178, Cl. 134-83.000.

Boeing Company, The: *See*—
Buus, Henning; MacFie, Thomas D.; and Justad, Odd, 4,363,098, Cl. 364-434.000.
Hause, Leroy R.; and Tsuchida, Dean Y., 4,361,963, Cl. 33-143.00L.
Skog, Jack E., 4,362,595, Cl. 156-626.000.

Boissiere, Guy, to Adidas Fabrique de Chausseurs de Sport. Combined kick board and arm stroke swimming practice device. 4,362,518, Cl. 441-60.000.

Bokelman, Gordon H.: *See*—
Keritsis, Gus D.; Bokelman, Gordon H.; and Gooden, Dewitt T., III, 4,362,170, Cl. 131-309.000.

Bolante, Jay J., to Appleton Electric Company. Fastener for attaching electrical boxes to steel studs. 4,362,284, Cl. 248-205.00R.

Bolin, Donald E., to Scott & Fetzer Company, The. Electronically regulated electromechanical appliance control. 4,362,953, Cl. 307-141.000.

Bolldorf, Kurt, to Pfaff Industriemaschinen GmbH. Table top embroidering machine having a plurality of embroidering units and to an adjustable table top therefor. 4,362,114, Cl. 112-217.200.

Bollhoff & Co.: *See*—
Kobusch, Klaus, 4,361,943, Cl. 29-240.000.

Bollmann, Klaus; Freygang, Hans-Joachim; Moeller, Jurgen; and Weniger, Manfred, to Siemens Aktiengesellschaft. Inductive voltage transformer and circuit therefor. 4,363,062, Cl. 361-35.000.

Bolssens, Frans P. J.; Franck, Guy C. J. L. G. G. M.; and Dehertefelt, Henri, to International Standard Electric Corporation. Valve and wire cutting, skinning and wrapping tool employing the valve. 4,361,941, Cl. 29-33.00M.

Bolt, Gary L.: *See*—
Leep, Gus W.; and Bolt, Gary L., 4,362,838, Cl. 524-444.000.

Boltswitch, Inc.: *See*—
Erickson, John W., 4,363,063, Cl. 361-48.000.

Bond, Curtis J., to Liqui-Box Corporation. Barrier spout and cap for flexible bags or pouches. 4,362,255, Cl. 222-107.000.

Bonin, John H.: *See*—
Meyer, John W.; Daniel, Arnold D., Jr.; and Bonin, John H., 4,362,441, Cl. 406-14.000.

Boos, Roger T.: *See*—
Egan, Walter D.; Boos, Roger T.; Byer, Robert L.; and DeFreez, Richard K., 4,362,388, Cl. 356-341.000.

Boosalis, Nicholas T.; and Sherman, George E., to Sherman-Boosalis Corporation. Closures for fluid sample cups. 4,362,698, Cl. 422-102.000.

Bopp & Reuther GmbH: *See*—
Richter, Herbert; and Schaaf, Karl, 4,362,183, Cl. 137-489.000.

Borden, Inc.: *See*—
Williams, Alexander W., 4,362,756, Cl. 426-587.000.

Boren, Karl G.: *See*—
Blomberg, Peter E.; Boren, Karl G.; and Ostergren, Axel H., 4,362,029, Cl. 62-497.000.

Borg-Warner Corporation: *See*—
Venema, Harry J., 4,363,020, Cl. 340-58.000.

Borrill, Paul L., to University College London. Printed circuit board. 4,362,899, Cl. 174-36.000.

Bosnak, John J., to Whelen Engineering Company, Inc. Electronic siren. 4,363,028, Cl. 340-384.00E.

Boss, Franz; Bieber, Gerold; and Schachmann, Karlheinz, to Zahnradfabrik Friedrichshafen AG. Hydraulic torque converter. 4,362,017, Cl. 60-337.000.

Bosserman, David A., to United States of America, Army. Infrared viewing system. 4,362,938, Cl. 250-332.000.

Bosuego, Gail P.: *See*—
Partridge, Jerry A.; and Bosuego, Gail P., 4,362,660, Cl. 252-631.000.

Bottenbruch, Ludwig: *See—*
Idel, Karsten; Freitag, Dieter; Bottenbruch, Ludwig; and Merten, Josef, 4,362,864, Cl. 528-388.000.

Bouchaudon, Jean; Farge, Daniel; and James, Claude, to Rhone-Poulenc Industries. Dipeptides, their preparation and compositions containing them. 4,362,716, Cl. 424-177.000.

Boucraut, Frantz M. J., to Valton S.A. Weaving loom for providing a ladderfree woven fabric. 4,362,082, Cl. 87-24.000.

Bouffechoux, Lucien, to Essilor International (Compagnie Generale d'Optique). Instrument stand. 4,362,283, Cl. 248-183.000.

Bour, Edmond H. J. P.; Warnier, Jean M. M.; and Brouwers, Johannes A. L., to Stamicarbon, B.V. Preparation of poly-2-pyrrolidone with N-(2-caprolactim)-caprolactam accelerator. 4,362,862, Cl. 528-314.000.

Bowen, B. Dean: *See—*
Mills, Gary L.; and Bowen, B. Dean, 4,362,578, Cl. 148-11.50N.

Bowen, Rafael L., to American Dental Association Health Foundation, The. Use of a polyfunctional surface-active comonomer and other agents to improve adhesion between a resin or composite material and a substrate. 4,362,889, Cl. 560-221.000.

Bowen, Robert F.: *See—*
Freedman, George; and Bowen, Robert F., 4,362,917, Cl. 219-10.55E.

Bowerman, William J., to BRS, Inc. Track shoe having metatarsal cushion on spike plate. 4,361,971, Cl. 36-129.000.

Bowsky, Benjamin; Siegel, Allen E.; and Kerber, Richard F., to Emerson Electric Co. Conductor seal assembly. 4,362,792, Cl. 429-181.000.

Boybay, Mustafa; and Demirel, Turgut, to Iowa State University Research Foundation, Inc. Process for preparing cryolite from fly ash. 4,362,703, Cl. 423-116.000.

Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, to Degussa Aktiengesellschaft. Sensor for measuring the oxygen content in the exhaust gas of combustion engines and method thereof. 4,362,605, Cl. 204-1.00T.

Brabets, Robert I.: *See—*
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,362,181, Cl. 137-68.00R.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; Dobhan, Herbert; Horling, Peter; and Klupfel, Norbert, 4,362,687, Cl. 264-318.000.

Brandon, William A., Jr.; and Bailey, William D., to Burlington Industries, Inc. Drapery fabric foam backing. 4,362,774, Cl. 428-159.000.

Brandt, Gerald B.: *See—*
Gottlieb, Milton; and Brandt, Gerald B., 4,362,057, Cl. 374-4.000.

Branson, Charles D.; and Shopsky, Harvey J., to Robertshaw Controls Company. Condition responsive electrical switch construction and parts and methods therefor. 4,363,015, Cl. 337-117.000.

Bratu, Polidor P.: *See—*
Necsoiu, Ion-Jan; Bratu, Polidor P.; Ghinea, Aurelian; and Axinte, Gavril, 4,362,066, Cl. 74-87.000.

Brauer, Gerhard M.; Argentar, Harold; and Stansbury, Jeffrey W., to United States of America, Health and Human Services. Cementitious dental compositions which do not inhibit polymerization. 4,362,510, Cl. 433-199.000.

Brehm, William F., Jr.; and Colburn, Richard P., to United States of America, Energy. Corrosion-resistant fuel cladding allow for liquid metal fast breeder reactors. 4,362,696, Cl. 376-417.000.

Brems, John H. Pallet registry mechanism. 4,362,233, Cl. 198-345.000.

Brenneman, William: *See—*
Winter, Joseph; Brenneman, William; and Fister, Julius C., 4,362,262, Cl. 228-117.000.

Brentlinger, Brent R. Aesthetically pleasing CRT-display of single-source signals. 4,362,973, Cl. 315-393.000.

Brethon, Jean P.: *See—*
Perraudin, Claude; Amarge, Edmond; Guiho, Jean P.; Horiot, Jean C.; Taniel, Gerard; Viel, Georges; and Brethon, Jean P., 4,362,947, Cl. 378-150.000.

Brewer, James A.; and Lowy, John A., to International Business Machines Corporation. Memory readback check method and apparatus. 4,363,125, Cl. 371-71.000.

Brienza, Michael J., to Singer Company, The. Touch sensitive control panel utilizing pyroelectric material. 4,363,027, Cl. 340-365.00R.

Brio Toy AB: *See—*
Petersson, Nils A. I., 4,361,979, Cl. 46-26.000.

Briska, Marian: *See—*
Bahr, Dietrich J.; Briska, Marian; and Schackert, Klaus, 4,362,843, Cl. 525-54.230.

Broadcast Electronics, Inc.: *See—*
Aurand, James A., 4,363,000, Cl. 330-56.000.

Brock, Josef: *See—*
Surkamp, Paul; and Brock, Josef, 4,362,188, Cl. 139-76.000.

Brockman, Arthur C., to Brockman, Arthur C. Extensible frame structure for trailer type land vehicle. 4,362,317, Cl. 280-656.000.

Brokaw, Adrian P. Digital-to-analog converter providing multiplicative and linear functions. 4,363,024, Cl. 340-347.0AD.

Brouwer, Charles W.; and Cowan, Larry C., to Leesona Corporation. Fluid weft insertion loom monitoring system. 4,362,189, Cl. 139-336.000.

Brouwers, Johannes A. L.: *See—*
Bour, Edmond H. J. P.; Warnier, Jean M. M.; and Brouwers, Johannes A. L., 4,362,862, Cl. 528-314.000.

Brown, Robert E., to General Electric Company. Rotary circuit component assembly and circuit mounting. 4,363,077, Cl. 361-400.000.

Brown & Williamson Tobacco Corporation: *See—*
Johnson, Robert R.; and Cantrell, Daniel V., 4,362,171, Cl. 131-336.000.
Johnson, Robert R., 4,362,172, Cl. 131-336.000.

Broze, Guy J.: *See—*
Teyssie, Philippe T.; Jerome, Robert J.; and Broze, Guy J., 4,362,837, Cl. 524-400.000.

BRS, Inc.: *See—*
Bowerman, William J., 4,361,971, Cl. 36-129.000.

Brundage, Ruth P.: *See—*
Lesher, George Y.; and Brundage, Ruth P., 4,362,735, Cl. 424-263.000.

Bruns, Klaus: *See—*
Schaper, Ulf-Armin; and Bruns, Klaus, 4,362,882, Cl. 549-274.000.

Brunswick Corporation: *See—*
Ginnow, Russell F., 4,362,515, Cl. 440-62.000.
Puryear, John W.; and Callan, Arthur D., 4,362,763, Cl. 427-14.100.

Brush, Claire; McCormick, Keith M.; and Moor, B. J. Cautery cleaning device. 4,361,926, Cl. 15-236.00R.

BSR Limited: *See—*
Evans, Philip H., 4,363,119, Cl. 369-266.000.

Bubelo, Vilya V.; Timofeev, Vitaly M.; Ganzhara, Vladimir I.; and Froze, Raisa M. Treatment of articles, for example, concrete articles, and an apparatus for accomplishing same. 4,362,505, Cl. 432-148.000.

Bucaro, Joseph A.; Cole, James H.; and Dardy, Henry D., to United States of America, Navy. Low noise remote optical fiber sound detector. 4,363,114, Cl. 367-149.000.

Buchert, Hermann: *See—*
Berg, Gerald A.; Buchert, Hermann; Duffy, Steve R.; Harder, Richard E.; Higgs, E. R.; Hoblit, Louis D.; Ryffel, James R.; Smith, Walter P.; and Stenzel, Edwin L., 4,362,682, Cl. 264-143.000.

Buck, Carl J., to Johnson & Johnson Products, Inc. Carboxylated naphthalene formaldehyde condensation polymers as dental plaque barriers. 4,362,712, Cl. 424-49.000.

Buck, Carl J., to Johnson & Johnson Products Inc. Salts of maleic acid copolymers as dental plaque barrier agents. 4,362,713, Cl. 424-54.000.

Buck, Yves; and Delcoigne, Adrien, to Isover Saint-Gobain. U-Shaped plasterboard. 4,361,995, Cl. 52-309.170.

Buddenhagen, James F.: *See—*
Evans, Randall G.; and Buddenhagen, James F., 4,363,127, Cl. 375-30.000.

Buder, Wolfgang: *See—*
Panster, Peter; Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, 4,362,885, Cl. 556-446.000.

Budzich, Tadeusz. Fully compensated fluid control valve. 4,362,087, Cl. 91-421.000.

Budzich, Tadeusz. Load responsive fluid control valve. 4,362,088, Cl. 91-446.000.

Buehler-Miag GmbH: *See—*
Olsztynski, Adalbert; and Hardegen, Bernd, 4,362,237, Cl. 198-509.000.

Buffalo China, Inc.: *See—*
Antonucci, Paul, 4,362,507, Cl. 432-259.000.

Bukrinsky, Anatoly M.; Rzheznikov, Julian V.; Shvyryaev, Jury V.; Tatarnikov, Viktor P.; Lapshin, Alexandr L.; Sanovich, Vladimir I.; Zlatin, David A.; Kuznetsov, Jury A.; and Babenko, Evgeny A. System for mitigating consequences of loss of coolant accident at nuclear power station. 4,362,693, Cl. 376-298.000.

Burk, Raymond D., to Monsanto Company. Process for the continuous polymerization of polyblends. 4,362,850, Cl. 525-316.000.

Burke, James J.; Douglass, Dale A.; Lacy, Robert A.; Murphy, Richard J.; Wilson, Delano D.; and Wright, Jonathan B., to Electric Power Research Institute, Inc. Method and means for monitoring faults in an electric power system and the like. 4,362,986, Cl. 324-51.000.

Burl, Michael: *See—*
Young, Ian R.; Burl, Michael; and Clarke, Graham J., 4,362,993, Cl. 324-309.000.

Burlington Industries, Inc.: *See—*
Brandon, William A., Jr.; and Bailey, William D., 4,362,774, Cl. 428-159.000.

Burns, Dennis A., to Sundstrand Corporation. Power FET short circuit protection. 4,363,068, Cl. 361-91.000.

Burnup, Michael; Hayes, Gerard F.; and Paul, Norman C., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britian and Northern Ireland, The. Plasticized cellulose polymers. 4,362,868, Cl. 536-66.000.

Burroughs Corporation: *See—*
Carbine, Joseph C., 4,362,991, Cl. 324-158.00P.
Wallace, Harry L., 4,362,572, Cl. 134-18.000.

Burroughs Wellcome Co.: *See—*
Wilkinson, Samuel, 4,362,717, Cl. 424-177.000.

Busboom, Garry W.: *See—*
Hanaway, Roger D.; James, Larry R.; and Busboom, Garry W., 4,362,005, Cl. 56-14.600.

Bush, Edward J.: *See—*
Anton, John C.; and Bush, Edward J., 4,362,588, Cl. 156-219.000.

Bush Universal Inc.: *See—*
Stanton, Leo F., 4,361,921, Cl. 12-146.00S.

Bushor, Ray E.; and Bischoff, Robert F., to Emerson Electric Co. Bearing closure assembly. 4,362,342, Cl. 308-36.100.

Busse, Peter: *See—*
Schnelle, Manfred; von Reden, Manfred; Pittasch, Willi; and Busse, Peter, 4,361,931, Cl. 16-252.000.

Bussey, Stephen: *See—*
Heath, Alastair E. F.; Neville, David J.; Cockburn, Barry; and Bussey, Stephen, 4,362,052, Cl. 73-119.00A.

Butler, David V.: *See—*
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,362,888, Cl. 560-162.000.

Buus, Henning; MacFie, Thomas D.; and Justad, Odd, to Boeing Company, The. Electric command spoiler system. 4,363,098, Cl. 364-434.000.

Buyalos, Edward J.: *See—*
Pendlebury, David; Rowan, Hugh H.; and Buyalos, Edward J., 4,362,852, Cl. 525-437.000.

Buzzi, Umberto: *See—*
Farfaletti-Casali, Flaviano; Buzzi, Umberto; Nobel, Leendert; and Reiter, Friedrich, 4,362,207, Cl. 165-10.000.

Byer, Robert L.: *See—*
Egan, Walter D.; Boos, Roger T.; Byer, Robert L.; and DeFreez, Richard K., 4,362,388, Cl. 356-341.000.

Byggnadsfysik A & K AB: *See—*
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C.G.R.-MeV, Commissariat a l'Energie Atomique: *See—*
Perraudin, Claude; Amarge, Edmond; Guilho, Jean P.; Horiot, Jean C.; Taniel, Gerard; Viel, Georges; and Brethon, Jean P., 4,362,947, Cl. 378-150.000.

Calabrese, Vincent, to Corum, Ries, Bannwart & Co. Device for winding and setting a timepiece. 4,362,395, Cl. 368-146.000.

Cale, Albert D., Jr.; and Leonard, Charles A., to A. H. Robins Company, Inc. Optical isomers of 4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide. 4,362,667, Cl. 548-557.000.

California Institute of Technology: *See—*
Gupta, Amitava; and Yavrouian, Andre H., 4,362,895, Cl. 136-256.000.

Calkins, Edward H. Air flow dry bowl pipe. 4,362,169, Cl. 131-196.000.

Callan, Arthur D.: *See—*
Puryear, John W.; and Callan, Arthur D., 4,362,763, Cl. 427-14.100.

Cambria Spring Company: *See—*
Lampert, Albert J., 4,362,318, Cl. 280-718.000.

Camco, Incorporated: *See—*
Pringle, Ronald E.; and Morris, Arthur J., 4,362,214, Cl. 166-322.000.

Campagnuolo, Carl J.; and Lee, Henry C., to United States of America, Army. Flow deflector for air driven power supply. 4,362,106, Cl. 102-207.000.

Campbell, Cecil W.; and Owen, Robert B., to United States of America, National Aeronautics and Space Administration. Collimated beam manifold with the number of output beams variable at a given output angle. 4,362,361, Cl. 350-171.000.

Campbell, Charles M.: *See—*
Mallory, Jeffrey B.; and Campbell, Charles M., 4,362,443, Cl. 406-188.000.

Campbell, Frank, Jr., to Fulbright & Jaworski. Single location insulator locking device. 4,362,506, Cl. 432-234.000.

Canada Packers Inc.: *See—*
Bharucha, Kekhusroo R.; Tin, Kam C.; Ajdukovic, Iva; and Ajdukovic, Djordje, 4,362,746, Cl. 424-330.000.

Canadian Patents and Development Limited: *See—*
Ritcey, Gordon M.; Price, Kenneth T.; and Lucas, Bernard H., 4,362,607, Cl. 204-108.000.
Rodman, William K.; and de St. Denys Prevost, Peter, 4,361,933, Cl. 17-48.000.

Cannon, Lee E., to Dana Corporation. Stepping motor control circuit. 4,362,979, Cl. 318-603.000.

Canon Kabushiki Kaisha: *See—*
Inose, Shuichi, 4,363,040, Cl. 360-51.000.
Kondo, Hideyo; and Yashiki, Yuichi, 4,362,799, Cl. 430-67.000.
Maeda, Masaya; Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,363,051, Cl. 360-33.100.
Watanabe, Yoshitaka; and Iwashita, Tomonori, 4,362,371, Cl. 354-173.000.

Cantrell, Daniel V.: *See—*
Johnson, Robert R.; and Cantrell, Daniel V., 4,362,171, Cl. 131-336.000.

Carbine, Joseph C., to Burroughs Corporation. Integrated circuit test probe assembly. 4,362,991, Cl. 324-158.00P.

Carl Schenck AG: *See—*
Sparr, Werner, 4,362,452, Cl. 414-37.000.

Carl Zeiss-Stiftung: *See—*
Esswein, Karlheinz, 4,362,365, Cl. 350-414.000.
Hager, Karl-Heinz, 4,362,354, Cl. 350-83.000.

Carlsson, Karl L., to Aktiebolaget Electrolux. Food preparing machine. 4,362,219, Cl. 177-245.000.

Carmon, Amiram; Claffey, Kevin; Lowe, Daniel; and Osipow, Lloyd, to IPCO Corporation. Stable gel electrode. 4,362,165, Cl. 128-640.000.

Carpenter, Neil L. Apparatus for recovery of hydrocarbons from tar-sands. 4,362,610, Cl. 204-263.000.

Carrier Corporation: *See—*
Voorhis, Roger J., 4,362,030, Cl. 62-510.000.

Carter, Malcolm N. A.; and Garrett, Peter R., to Lever Brothers Company. Alkyl phosphoric acid polyvalent salts-mineral oil lather controlled detergent compositions. 4,362,642, Cl. 252-174.160.

Carver, Tommy L. Structural support for interior wall partition assembly. 4,361,994, Cl. 52-238.100.

Casals, Jaime R.: *See—*
Casals, Ramon R.; and Casals, Jaime R., 4,362,488, Cl. 425-113.000.

Casals, Ramon R.; and Casals, Jaime R. Extruder for continuous manufacture of reinforced tubing, especially hose. 4,362,488, Cl. 425-113.000.

Casanova, Paul, to Techniques Industrielles et Minieres. Tunneling system. 4,362,337, Cl. 299-31.000.

Caskey, Michele M.; and Sramek, John A., to S. C. Johnson & Son, Inc. Gelled laundry pre-spotter. 4,362,638, Cl. 252-90.000.

Castelberg, Michael J.: *See—*
Taner, Mehmet T.; Koehler, Fulton; Anstey, Nigel A.; and Castelberg, Michael J., 4,363,113, Cl. 367-63.000.

Castleman, B. Wayne; and Donehoo, Robert F., to Honeywell Inc. Apparatus and a method for detecting and measuring trace gases in air or other gaseous background. 4,362,941, Cl. 250-381.000.

Castrodale, Daniel O.; and Fournier, Thomas R., to International Business Machines Corporation. Tray for magnetic disk drive machine. 4,363,044, Cl. 360-98.000.

Caterpillar Tractor Co.: *See—*
Cochran, Thomas E., 4,362,431, Cl. 404-117.000.
Melocik, Kurt B.; and Earley, Robert W., 4,362,089, Cl. 91-461.000.

Cathers, William P., to PPG Industries, Inc. Selective vacuum lifting device. 4,362,461, Cl. 414-752.000.

Cavazza, Claudio. Therapeutic method and compositions for the treatment of juvenile diabetes mellitus. 4,362,719, Cl. 424-178.000.

Ceintrey, Marcel. Wabocrete FMV. 4,362,430, Cl. 404-68.000.

Celotex Corporation, The: *See—*
Skowronski, Michael J.; and DeLeon, Alberto, 4,362,678, Cl. 264-46.300.

Censor Patent-und Versuchsanstalt: *See—*
Lobach, Ernst, 4,362,385, Cl. 355-77.000.

Centra-Burkle GmbH & Co.: *See—*
Weimer, Gunther, 4,362,988, Cl. 324-62.000.

Centro Ricerche Fiat S.p.A.: *See—*
Bertone, Antonino; and Vannini, Paolo, 4,362,019, Cl. 60-547.00A.
Panagin, Romano, 4,362,109, Cl. 105-182.00R.

Cerami, Anthony, to Evreka Inc. Blood cholesterol level reducing agent and method. 4,362,711, Cl. 424-33.000.

Cerundolo, Daniel G.: *See—*
Reimels, Harry G.; Cerundolo, Daniel G.; and Downing, Roy W., 4,362,161, Cl. 128-310.000.

Chambers, Charles W., Jr., to Tellabs, Inc. Electronic transformer. 4,363,008, Cl. 333-24.00R.

Champ, Robert B.: *See—*
Anderson, Howard W.; and Champ, Robert B., 4,362,798, Cl. 430-59.000.

Champion International Corporation: *See—*
Roccaforte, Harry I., 4,362,239, Cl. 206-45.140.
Webinger, George P., 4,362,266, Cl. 229-33.000.
Williams, Donald L., 4,362,265, Cl. 229-32.000.

Chang, Pei K.; and Scibelli, Gabriele E., to Nutrisearch Company. Use of heat coagulated whey protein concentrate as a substitute for gelled egg white. 4,362,761, Cl. 426-657.000.

Chaput, Dale T.: *See—*
Stephenson, Roger C.; and Chaput, Dale T., 4,362,348, Cl. 339-75.00M.

Chatani, Yasushi, to Kawada Co., Ltd. Rolling toy and axle arrangement. 4,361,980, Cl. 46-111.000.

Chauvin, Yves; Commereuc, Dominique; Leger, Gerard; Gaillard, Jean; and Phung, Nhu H., to Institut Francais du Petrole. Catalyst and process for olefin oligomerization. 4,362,650, Cl. 252-431.00C.

Cheetham, Jeffery J. Multi-compartment container for storing and mixing dental amalgam ingredients, and method of using such a container. 4,362,242, Cl. 206-219.000.

Chembiomed Ltd.: *See—*
Lemieux, Raymond U.; and Ratcliffe, R. Murray, 4,362,720, Cl. 424-180.000.

Chemed Corporation: *See—*
Goldsmith, Herbert; and Stilwell, Richard M., 4,362,994, Cl. 324-449.000.

Chemo-Sero-Therapeutic Research Institute, The: *See—*
Ono, Syoji; Fukumoto, Yuji; and Yoshida, Tsunemasa, 4,362,661, Cl. 260-112.00B.

Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzutto, Anthony B., to Amstar Corporation. Crystallized, readily water dispersible sugar product containing heat sensitive, acidic or high invert sugar substances. 4,362,757, Cl. 426-599.000.

Chen, Mung; Trutna, William R., Jr.; Watts, Michael P. C.; Bartlett, Keith G.; and Hillis, Gary, to Hewlett-Packard Company. Multilayer photoresist process utilizing an absorbant dye. 4,362,809, Cl. 430-312.000.

Chenausky, Peter P.; Drinkwater, Erroll H.; and Laughman, Lanny M., to United Technologies Corporation. Tuned-circuit RF-excited laser. 4,363,126, Cl. 372-38.000.

Cherny, Anatoly A. Cupola. 4,362,293, Cl. 266-219.000.

Cheshier, Donald G.: *See—*
Turner, Charles S.; McNeal, Donald J.; Cheshier, Donald G.; and Gray, James C., 4,362,951, Cl. 307-66.000.

Chevron Research Company: *See—*
Small, Vernon R., Jr., 4,362,636, Cl. 252-56.00R.
Ziman, Stephen D., 4,362,548, Cl. 71-90.000.

Chin, Ronald R.: *See—*
Cleary, Robert J.; and Chin, Ronald R., 4,362,270, Cl. 236-46.00R.

Choberka, John M.; and Rex, Donald K., to International Business Machines Corp. Dot matrix print head. 4,362,406, Cl. 400-124.000.

Choinski, Edward J., to Polaroid Corporation. Fluid dispensing system. 4,362,122, Cl. 118-600.000.

Christenson, Christopher P.: *See*—
Vance, Fred L., Jr.; Guerra, Rafael E.; and Christenson, Christopher P., 4,362,654, Cl. 252-469.000.

Chu, Kwo R.; Sprangle, Phillip A.; and Granatstein, Victor L., to United States of America, Navy. Slow-wave wideband cyclotron amplifier. 4,362,968, Cl. 315-3.500.

Ciba-Geigy AG: *See*—
Webb, Terence C., 4,362,878, Cl. 548-253.000.

Ciba-Geigy Corporation: *See*—
Demmer, Christopher G., 4,362,853, Cl. 525-533.000.
Pineger, Reginald N.; and Clark, Malcolm C., 4,362,565, Cl. 106-21.000.
Puck, Alfred; and Voirol, Peter, 4,362,521, Cl. 464-181.000.
Wasley, Jan W. F., 4,362,666, Cl. 260-245.700.

Claffey, Kevin: *See*—
Carmon, Amiram; Claffey, Kevin; Lowe, Daniel; and Osipow, Lloyd, 4,362,165, Cl. 128-640.000.

Clarion Co., Ltd.: *See*—
Osaka, Hiroshi; Honma, Akira; and Kizaki, Yoshio, 4,363,003, Cl. 331-1.00A.

Clark, Benton C., III, to Martin Marietta Corporation. Field portable element analysis unit. 4,362,935, Cl. 378-48.000.

Clark, Kenneth R.: *See*—
Rowland, William G.; Morgan, Arthur E. W.; and Clark, Kenneth R., 4,362,002, Cl. 53-478.000.

Clark, Malcolm C.: *See*—
Pineger, Reginald N.; and Clark, Malcolm C., 4,362,565, Cl. 106-21.000.

Clark, Roy, to Rockwell International Corporation. Method and apparatus for measuring visibility from the polarization properties of the daylight sky. 4,362,387, Cl. 356-338.000.

Clarke, Graham J.: *See*—
Young, Ian R.; Burl, Michael; and Clarke, Graham J., 4,362,993, Cl. 324-309.000.

Cleary, Robert J.; and Chin, Ronald R., to Energy Master, Inc. Electronic temperature control system. 4,362,270, Cl. 236-46.00R.

Cleveland, Joseph J., to GTE Products Corporation. Ceramic heat recuperative structure and assembly. 4,362,209, Cl. 165-166.000.

Clinton, James R., to Huntron Instruments, Inc. Apparatus for detecting electrical shorts in electronic circuits. 4,362,987, Cl. 324-52.000.

Clip Strip Corporation: *See*—
Lewis, Lawrence A., 4,362,285, Cl. 248-221.300.

Clishem, Thomas A.; Neville, Melvin L.; and Pokallus, Leonard W., to Corning Glass Works. Collapsible core and method of using same. 4,362,686, Cl. 264-317.000.

Cloud, Don L., to L. C. Tool Distributors, Inc. Reversible wrench. 4,362,073, Cl. 81-59.100.

CNG Research Company: *See*—
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,362,181, Cl. 137-68.00R.

Coal Industry (Patents) Limited: *See*—
Wilson, John G.; and Scott, John, 4,362,153, Cl. 128-202.260.

Cobaugh, Robert F.; and Graeff, Norwood C., to AMP Incorporated. Contact clip for connecting a ceramic substrate to a printed circuit board. 4,362,353, Cl. 339-258.00P.

Coca-Cola Company: *See*—
Frye, Robert S.; and Boehnlein, Bernard M., Sr., 4,362,178, Cl. 134-83.000.

Cochran, Thomas E., to Caterpillar Tractor Co. Vibrating apparatus for vibratory compactors. 4,362,431, Cl. 404-117.000.

Cockburn, Barry: *See*—
Heath, Alastair E. F.; Neville, David J.; Cockburn, Barry; and Bussey, Stephen, 4,362,052, Cl. 73-119.00A.

Cockerham, C. C., Jr.; and Nelson, John P. Apparatus and method for wrapping and sealing cylindrical packages with a stretch film material. 4,362,001, Cl. 53-441.000.

Codman & Shurtleff, Inc.: *See*—
Reimels, Harry G.; Cerundolo, Daniel G.; and Downing, Roy W., 4,362,161, Cl. 128-310.000.

Coen Company, Inc.: *See*—
Davis, Albert W., 4,362,274, Cl. 239-419.300.

Coffee, Ronald A., to Imperial Chemical Industries Limited. Sprayers. 4,362,275, Cl. 239-700.000.

Coggins, George G., to ZeCo, Incorporated. Ion emitter-indicator. 4,363,072, Cl. 361-231.000.

Cohen, Daniel E. Self-supporting infant chair. 4,362,333, Cl. 297-174.000.

Cohn, Jona; Davidson, Allen L.; and van den Heuvel, Anthony P., to Motorola, Inc. Method and means of minimizing simulcast distortion in a receiver when using a same-frequency repeater. 4,363,129, Cl. 455-17.000.

Cohn-Sfetcu, Sorin: *See*—
Agnew, David G.; and Cohn-Sfetcu, Sorin, 4,363,100, Cl. 364-484.000.

Coker, Jess M. Can opener for tab-type closure. 4,362,071, Cl. 81-3.46R.

Colburn, Richard P.: *See*—
Brehm, William F., Jr.; and Colburn, Richard P., 4,362,696, Cl. 376-417.000.

Cole, James C.; and Cronenwett, George F., to HPM Corporation. Rotor die casting method. 4,362,205, Cl. 164-109.000.

Cole, James H.: *See*—
Bucaro, Joseph A.; Cole, James H.; and Dardy, Henry D., 4,363,114, Cl. 367-149.000.

Colgate-Palmolive Company: *See*—
Schreiber, Ronald S., 4,362,640, Cl. 252-135.000.

Collet-Cassart, Daniel: *See*—
de Steenwinkel, Floris; Collet-Cassart, Daniel; and Masson, Pierre L., 4,362,531, Cl. 23-230.00B.

Collignon, Pierre: *See*—
Baudin, Pol; Collignon, Pierre; and Gillieaux, Claude, 4,362,587, Cl. 156-87.000.

Collin, Claude, to Thomson-CSF. Diversity radio transmission system having a simple and economical structure. 4,363,132, Cl. 455-52.000.

Collins, Keith: *See*—
Cox, Karl; and Collins, Keith, 4,362,538, Cl. 55-118.000.

Comfort, Joseph A.; Perry, Thomas J.; and Loos, Michel, to GTE Automatic Electric Labs Inc. Arbitration controller providing for access of a common resource by a duplex plurality of central processing units. 4,363,096, Cl. 364-200.000.

Commereuc, Dominique: *See*—
Chauvin, Yves; Commereuc, Dominique; Leger, Gerard; Gaillard, Jean; and Phung, Nhu H., 4,362,650, Cl. 252-431.00C.

Commissariat a l'Energie Atomique: *See*—
Goumondy, Jean P.; and Hanssens, Alain, 4,361,965, Cl. 34-57.00R.
Kayser, Gaston, 4,362,694, Cl. 376-298.000.

Conoco Inc.: *See*—
Wasson, George E.; and Theodore, Frank W., 4,362,532, Cl. 44-23.000.

Conover, Maria T. Fluid wave energy dissipating and absorbing structure. 4,362,432, Cl. 405-33.000.

Contin, Fulvio, to Metallurgie Hoboken-Overpelt. Process for preparing a flame retardant composition from sodium antimonate and composition thereby produced. 4,362,658, Cl. 252-609.000.

Continental Group, Inc., The: *See*—
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,362,498, Cl. 425-526.000.
Roth, Donald J.; Kubis, Charles S.; and Walter, John, 4,362,254, Cl. 220-307.000.

Control Technology: *See*—
Turner, Charles S.; McNeal, Donald J.; Cheshier, Donald G.; and Gray, James C., 4,362,951, Cl. 307-66.000.

Cook, Don E.; and Cook, Dorothy M. Water filter. 4,362,618, Cl. 210-275.000.

Cook, Dorothy M.: *See*—
Cook, Don E.; and Cook, Dorothy M., 4,362,618, Cl. 210-275.000.

Cook, Francis W., Jr., to Litton Industrial Products, Inc. Clamp assembly for a friction welding machine. 4,362,261, Cl. 228-2.000.

Cooper, Frank W., Jr.: *See*—
Pekar, Frank M.; and Cooper, Frank W., Jr., 4,362,447, Cl. 409-200.000.

Cooper, Stephen M.; Shafer, Sheldon J.; and Tyrell, John A., to General Electric Company. Polycarbonates stabilized with sulfolane derivatives. 4,362,829, Cl. 524-84.000.

Cope Allman Plastics Limited: *See*—
Wortley, Michael; Hughes, Michael; and Povey, Robert, 4,362,253, Cl. 220-276.000.

Corbett, Robert E.: *See*—
vonReis, Charles E.; Vadnay, Attila; and Corbett, Robert E., 4,362,047, Cl. 73-28.000.

Cordella, Johannes; Bayer, Franz; and Felbermayer, Erich, to Voest-Alpine Aktiengesellschaft. Supporting and guiding stand arrangement to be used in a continuous casting plant. 4,362,206, Cl. 164-448.000.

Cordes, Richard E.; and Sears, Ronald J., to NCR Corporation. Means for avoiding accidental actuation of a critical function key. 4,362,408, Cl. 400-481.000.

Cornelius, Dennis A.; Asmus, Clifford V.; and Sternberg, Moshe M., to Miles Laboratories, Inc. Acylation of *Mucor pusillus* microbial rennet enzyme. 4,362,818, Cl. 435-223.000.

Corning Glass Works: *See*—
Bailey, Alan C.; and Miller, Stephen B., 4,362,545, Cl. 65-169.000.
Clishem, Thomas A.; Neville, Melvin L.; and Pokallus, Leonard W., 4,362,686, Cl. 264-317.000.
Kane, William T.; and Whitney, William P., II, 4,362,580, Cl. 148-16.000.
Olszewski, Anthony R.; Tick, Paul A.; and Sanford, Leon M., deceased, 4,362,819, Cl. 501-44.000.

Cornou, Jean, to Allibert S.A. Nestable containers with indicia holder. 4,362,244, Cl. 206-507.000.

Corum, Ries, Bannwart & Co.: *See*—
Calabrese, Vincent, 4,362,395, Cl. 368-146.000.

Cosden Technology, Inc.: *See*—
Rutledge, Raleigh N., 4,362,482, Cl. 425-4.00C.

Cottingham, Auburn B., to National Distillers & Chemical Corp. Container for storing reactive or volatile material. 4,362,250, Cl. 215-247.000.

Cotton, Curran D., to Maytag Company, The. Power-up control for microprocessor based appliance. 4,362,954, Cl. 307-142.000.

Cottrell, George W. Traction method. 4,362,151, Cl. 128-75.000.

Coulter Systems Corporation: *See*—
Staples, Phillip E., 4,362,804, Cl. 430-126.000.

Countdown: *See*—
Laube, Dennis; Hausch, Daniel E.; and Bell, Michael, 4,362,329, Cl. 296-26.000.

Coursen, Lawrence J., to Eli Lilly and Company. Cosmetic cream pack formulation. 4,362,747, Cl. 424-358.000.

Coventry Climax Limited: *See*—
Baston, Eric W., 4,362,220, Cl. 180-68.500.

Cowan, Larry C.: *See*—
Brouwer, Charles W.; and Cowan, Larry C., 4,362,189, Cl. 139-336.000.

Cox, Donald M.: *See*—
Kramer, George M.; Cox, Donald M.; Dines, Martin B.; and Maas, Edward T., Jr., 4,362,669, Cl. 260-429.100.

Cox Family Laboratories, Inc.: *See*—
Cox, James P., 4,362,748, Cl. 426-1.000.

Cox, Howard W., to Mission Marketing Corp. of Arizona. Air deflection duct assembly. 4,362,091, Cl. 98-40.00C.

Cox, James P., to Wells, Loyal; and Cox Family Laboratories, Inc., a part interest. Method for forming shaped products for human and/or animal consumption or as marine bait and products produced thereby. 4,362,748, Cl. 426-1.000.

Cox, Karl; and Collins, Keith, to Dresser Industries, Inc. Wet electrostatic precipitator having means for dampening the swaying of its discharge electrodes. 4,362,538, Cl. 55-118.000.

Cragoe, Edward J., Jr.: *See*—
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., 4,362,724, Cl. 424-246.000.

Cramer, Francis W. See through automobile sun visor. 4,362,330, Cl. 296-97.00F.

Crathco, Inc.: *See*—
Armstrong, Alfred, 4,362,028, Cl. 62-390.000.

Credelle, Thomas L., to RCA Corporation. Electron leakage reduction in flat panel display devices. 4,362,966, Cl. 313-422.000.

Cresap, Wesley L.; Myers, Alan W.; and Viswanathan, Sathy P., to Textron, Inc. Pylon mounting system for reducing helicopter vibration. 4,362,281, Cl. 244-17.270.

Cronenwett, George F.: *See*—
Cole, James C.; and Cronenwett, George F., 4,362,205, Cl. 164-109.000.

Crouzet, Henri, to ASA S.A. False twist machine. 4,362,010, Cl. 57-279.000.

Crow, Glendon L., Jr., to Lamson & Sessions Co., The. Method of forming a fastener. 4,362,042, Cl. 72-353.000.

Crucius, Michael; and Hassan, Mohamed A., to Siemens Aktiengesellschaft. Overvoltage arrester with arrester elements in a frame comprising columns. 4,363,069, Cl. 361-130.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Melindo, Flavio, 4,362,908, Cl. 179-18.0HB.

Cummins, William A.: *See*—
Stelling, Walter R., Jr.; Cummins, William A.; and Beaudoin, John F., 4,362,098, Cl. 101-219.000.

Cunliffe, Frank: *See*—
Jefferson, John R.; and Cunliffe, Frank, 4,362,140, Cl. 123-366.000.

Cuomo, Frank W., to United States of America, Navy. Low frequency, log-periodic acoustic array. 4,363,115, Cl. 367-154.000.

Cusano, Dominic A.; and Prener, Jerome S., to General Electric Company. Distributed phosphor scintillator structures. 4,362,946, Cl. 250-483.000.

Cyclonaire Corporation: *See*—
Bentzen-Bilkvist, Ib; and Jacobson, Wayne M., 4,362,442, Cl. 406-109.000.

Czerniejewski, Francis R., to Westinghouse Electric Corp. Computerized power demand control in an electrochemical plant. 4,363,101, Cl. 364-492.000.

Daaboul, Fouad: *See*—
Black, David H. A.; Joyce, Robert H.; Daaboul, Fouad; and Le Van, Tiu, 4,363,122, Cl. 370-81.000.

Dai Nippon Printing Co., Ltd.: *See*—
Mizuno, Shogo; and Ishii, Sumio, 4,362,529, Cl. 8-471.000.

Daido Tokushuko, K.K.: *See*—
Kishida, Toshio, 4,362,556, Cl. 75-12.000.

Daikin Kogyo Co., Ltd.: *See*—
Nakajima, Takeaki; Yoshimura, Tatsushiro; and Karasawa, Yukihiko, 4,362,162, Cl. 128-334.00R.

Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, to Hitachi, Ltd. Winding structure for static electrical induction apparatus. 4,363,012, Cl. 336-60.000.

Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, to Hitachi, Ltd. Winding structure for static electrical induction apparatus. 4,363,013, Cl. 336-60.000.

Daimler-Benz Aktiengesellschaft: *See*—
Schobbe, Hermann; Konig, Wolfhard; and Mohrmann, Werner, 4,362,294, Cl. 267-170.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Otani, Masami, 4,362,376, Cl. 354-319.000.
Yoshida, Atsushi; and Nomura, Norimasa, 4,362,377, Cl. 354-320.000.

Dainippon Seizo Kabushiki Kaisha: *See*—
Yonehara, Hiroyuki; Kimura, Yoshikazu; and Tanabe, Kenjiro, 4,362,383, Cl. 355-71.000.

Dakovski, Lyudmil G.; and Kassabov, Nikola K., to V M E I "Lenin". Bus-register device for information processing. 4,362,926, Cl. 235-92.0CC.

D'Amico, John J., to Monsanto Company. Imides derived from 2-thioxo-3-benzox(thia)azoline acetic, and propionic acids. 4,362,547, Cl. 71-90.000.

Dammann, Hans; and Killat, Ulrich, to U.S. Philips Corporation. Coupling device for coupling signals into and out of a transmission glass-fiber. 4,362,359, Cl. 350-96.190.

Dana Corporation: *See*—
Cannon, Lee E., 4,362,979, Cl. 318-603.000.

Daniel, Arnold D., Jr.: *See*—
Meyer, John W.; Daniel, Arnold D., Jr.; and Bonin, John H., 4,362,441, Cl. 406-14.000.

Daniels, Lowell W.: *See*—
Luebke, Clement J.; and Daniels, Lowell W., 4,362,148, Cl. 126-369.000.

Danko, Joseph C., to United States of America, Energy. Method for producing microporous metal bodies. 4,362,564, Cl. 75-222.000.

Danko, Joseph C., to United States of America, Energy. Method of producing microporous joints in metal bodies. 4,362,582, Cl. 148-127.000.

Dannhauser, Friedrich; Kempter, Karl; Krausse, Jurgen; and Schnoller, Manfred, to Siemens Aktiengesellschaft. Method for preparing a protective amorphous silicon passivating film on a semiconductor device. 4,362,766, Cl. 427-39.000.

Dardy, Henry D.: *See*—
Bucaro, Joseph A.; Cole, James H.; and Dardy, Henry D., 4,363,114, Cl. 367-149.000.

Darnell, Randolph G. Golf score card and pencil holder. 4,361,934, Cl. 24-3.00M.

Dataproducts Corporation: *See*—
Jezbera, Val K., 4,362,787, Cl. 428-572.000.

Davenport, William H., to Tektronix, Inc. Current boost circuit for a pulse generator output stage. 4,362,955, Cl. 307-263.000.

Davidson, Allen L.: *See*—
Cohn, Jona; Davidson, Allen L.; and van den Heuvel, Anthony P., 4,363,129, Cl. 455-17.000.

Davis, Albert W., to Coen Company, Inc. Dual fuel atomizer. 4,362,274, Cl. 239-419.300.

Davis, C. Arthur. Cable banding lock ring. 4,361,937, Cl. 24-68.0PP.

Davis, Gordon T.; Faulkner, Edward H.; Gasparri, Angelo S.; Magee, Robert A.; Remsen, Lawrence P.; Saylor, Dennis L.; and Stricker, Alfred A., to International Business Machines Corporation. Automatic multilayer ceramic (MLC) screening machine. 4,362,486, Cl. 425-110.000.

Davis, Michael I.; and Sze, Daniel T. W., to International Business Machines Corporation. Processor intercommunication system. 4,363,093, Cl. 364-200.000.

Davis, Pauls; and Wilson, Joe C., to BASF Wyandotte Corporation. Arylalkyl silicone sulfonate-silicate copolymers. 4,362,644, Cl. 252-389.00R.

Dayco Corporation: *See*—
Frisch, Paul P., 4,362,180, Cl. 137-15.000.
Standley, Paul M., 4,362,200, Cl. 152-153.000.

de Antonis, Ferdinand A.; and Degrassi, Alfieri, to Allied Corporation. Uniaxially oriented nylon film as carrier web for fiber reinforced plastics. 4,362,585, Cl. 156-62.200.

DeArmas, Ramon O. Staccato cowbell. 4,362,080, Cl. 84-406.000.

de Ayala, Miria P. B. Rotary vane machine with rings radially constraining the vanes. 4,362,481, Cl. 418-256.000.

De Brandt, Constantine W. M. V. A.: *See*—
Blanchart, Alain P. O.; Van Bogaert, Gilbert J. L.; De Brandt, Constantine W. M. V. A.; and Spaepen, Gustaaf J. F., 4,362,790, Cl. 429-42.000.

DeCaro, Charles J., to Textron Inc. Fastener plate and assembly. 4,361,997, Cl. 52-512.000.

Decoster, Michel H. F.: *See*—
Grobben, Henri M.; and Decoster, Michel H. F., 4,363,120, Cl. 369-267.000.

Deere & Company: *See*—
Grobler, Werner H., 4,362,055, Cl. 73-162.000.
Hengen, Edward J.; and Bassett, James H., 4,362,168, Cl. 130-27.00H.
Lob, James P.; and Tessenske, Dean J., 4,362,524, Cl. 474-88.000.

DeFreez, Richard K.: *See*—
Egan, Walter D.; Boos, Roger T.; Byer, Robert L.; and DeFreez, Richard K., 4,362,388, Cl. 356-341.000.

Degrassi, Alfieri: *See*—
de Antonis, Ferdinand A.; and Degrassi, Alfieri, 4,362,585, Cl. 156-62.200.

Degussa Aktiengesellschaft: *See*—
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,362,605, Cl. 204-1.00T.
Panster, Peter; Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, 4,362,885, Cl. 556-446.000.

DeHart, Dwain L.: *See*—
Hawkins, Ronald G.; and DeHart, Dwain L., 4,362,352, Cl. 339-248.00S.

Dehertefelt, Henri: *See*—
Bolssens, Frans P. J.; Franck, Guy C. J. L. G. G. M.; and Dehertefelt, Henri, 4,361,941, Cl. 29-33.00M.

Deiaco, Frank; and McInnes, Allan J. Reach compensator for logging truck and trailer. 4,362,312, Cl. 280-404.000.

Dekkers, Cornelis, to Gusto Engineering B.V. Mobile platform or platform to be used as floating workshop. 4,362,120, Cl. 114-265.000.

Delcoigne, Adrien: *See*—
Buck, Yves; and Delcoigne, Adrien, 4,361,995, Cl. 52-309.170.

DeLeon, Alberto: *See*—
Skowronski, Michael J.; and DeLeon, Alberto, 4,362,678, Cl. 264-46.300.

della Valle, Francesco, to FIDIA, S.p.A. Therapeutic composition for preventing the aggregation of platelets. 4,362,741, Cl. 424-281.000.

DeMarco, Thomas M., to NFE International Ltd. Hydraulic door opening/closing and locking/unlocking apparatus. 4,361,985, Cl. 49-280.000.

Demas, Nickolas P., to Edison International, Inc. Scan synthesized beam headlamp. 4,363,085, Cl. 362-283.000.
Demirel, Turgut: *See*—
Boybay, Mustafa; and Demirel, Turgut, 4,362,703, Cl. 423-116.000.
Demmer, Christopher G., to Ciba-Geigy Corporation. Resinous salts, their preparation, and their use in coatings. 4,362,853, Cl. 525-533.000.
Dentan Kabushiki Kaisha: *See*—
Kuroda, Toshihiko; and Sugiyama, Kazuo, 4,363,005, Cl. 331-112.000.
Dentek Systems, Inc.: *See*—
Sylvester, Donald D., 4,363,080, Cl. 362-32.000.
Denzin, Warren. Horizontally rotating blade-type conditioning device for swathers. 4,362,006, Cl. 56-192.000.
DeRemer, Harold A., to General Electric Company. Ventilated electronic apparatus for heated appliances. 4,363,075, Cl. 361-383.000.
de St. Denys Prevost, Peter: *See*—
Rodman, William K.; and de St. Denys Prevost, Peter, 4,361,933, Cl. 17-48.000.
de Santerre, Henri T.: *See*—
Perrut, Michel; Pointet, Marcel; and de Santerre, Henri T., 4,362,046, Cl. 73-23.100.
DeSantis, Raymond P., to PTX-Pentronix, Inc. Hydraulic shock absorbing mechanism for the ram of powder compacting presses and the like. 4,362,483, Cl. 425-78.000.
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Lefevre, Lloyd E.; and Stevenson, Fred, 4,362,834, Cl. 524-297.000.
Tung, Lu H.; Kirkby, Larry L.; and Lyons, Charles E., 4,362,849, Cl. 525-316.000.
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Woo, Edmund P., 4,362,670, Cl. 260-465.00K.
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Downey, John H. Portable hair dryer. 4,361,966, Cl. 34-99.000.
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Schlyter, Fredrik, 4,363,121, Cl. 370-24.000.
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Miller, Philip E., 4,362,777, Cl. 428-224.000.
Schmidt, Gunter, 4,362,296, Cl. 271-121.000.

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Plassmeier, Horst, 4,363,105, Cl. 364-580.000.

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Lancaster, Jesse F., 4,361,955, Cl. 29-884.000.

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Sproul, Nolte V., 4,362,525, Cl. 474-117.000.

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Moniot, Jerome L.; Fox, Rita T.; Sprague, Peter W.; and Haslanger, Martin F., 4,362,872, Cl. 542-429.000.
Sykes, Richard B.; Wells, Jerry S.; and Parker, William L., 4,362,814, Cl. 435-119.000.

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Melocik, Kurt B.; and Earley, Robert W., 4,362,089, Cl. 91-461.000.

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Whitmore, Keith E., 4,362,806, Cl. 430-202.000.

Eaton Corporation: *See—*
Anderson, Harry B., 4,362,916, Cl. 200-153.00T.
Gee, Thomas A., 4,362,226, Cl. 192-58.00B.
Jaeschke, Ralph L., 4,362,958, Cl. 310-59.000.
Pahl, James H., 4,362,479, Cl. 418-61.00B.
Worthen, Roger P., 4,362,134, Cl. 123-188.0AA.

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Gerber, Karl-Heinz, 4,362,961, Cl. 310-370.000.

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Stephens, Martin A., 4,362,484, Cl. 425-78.000.

Ed Frogerais SA: *See—*
Livingstone, David, 4,362,491, Cl. 425-186.000.

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Krick, Gerd, 4,362,163, Cl. 604-280.000.

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Eiring, Karl; and Loffler, Bernhard, to Krupp Polysius AG. Planetary cooler. 4,362,503, Cl. 432-80.000.

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Armstrong, Peter R., 4,362,404, Cl. 374-39.000.
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Gottlieb, Milton; and Brandt, Gerald B., 4,362,057, Cl. 374-4.000.

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Plessers, Jacques J. P., 4,362,562, Cl. 75-130.00R.

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Blanchart, Alain P. O.; Van Bogaert, Gilbert J. L.; De Brandt, Constantine W. M. V. A.; and Spaepen, Gustaaf J. F., 4,362,790, Cl. 429-42.000.

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Coursen, Lawrence J., 4,362,747, Cl. 424-358.000.
Gerzon, Koert; and Miller, Jean C., 4,362,664, Cl. 260-244.400.
Hamill, Robert L.; Huff, Gerald L.; Baltz, Richard H.; and Seno, Eugene T., 4,362,881, Cl. 549-271.000.
Miesel, John L., 4,362,550, Cl. 71-93.000.

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Elliott, Gordon; Elliott, Stephen; and Elliott, Frank, 4,362,092, Cl. 98-50.000.

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Elward, John R., to Pacific Paperboard Products, Inc. Article carrier carton. 4,362,240, Cl. 206-188.000.

Elwell, John J., to United States of America, Air Force. Solvent mixture for removing polysulfide and silicone rubber coatings. 4,362,570, Cl. 106-311.000.

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Bowsky, Benjamin; Siegel, Allen E.; and Kerber, Richard F., 4,362,792, Cl. 429-181.000.
Bushor, Ray E.; and Bischoff, Robert F., 4,362,342, Cl. 308-36.100.
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Leach, Charles W.; McElroy, Jerry W.; and Donnelly, Donald E., 4,363,014, Cl. 336-90.000.
Peachee, C. Theodore, 4,361,953, Cl. 29-596.000.

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Emura, Akira: *See—*
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Encon Products, Inc.: *See—*
Simpson, Harold G., 4,361,993, Cl. 52-222.000.

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Cleary, Robert J.; and Chin, Ronald R., 4,362,270, Cl. 236-46.00R.

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Maru, Hansraj C.; and Baker, Bernard S., 4,362,788, Cl. 429-13.000.

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Keck, Johannes; Kruger, Gerd; Pieper, Helmut; Noll, Klaus; Engelhardt, Gunther; Promberger, Norbert; and Zimmermann, Rainer, 4,362,738, Cl. 424-274.000.

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Sheldon, James R., 4,362,928, Cl. 235-375.000.

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Englund, Arvid E., Jr.; and Mears, Gregory N., to General Electric Company. Combining and filter circuit for a phase locked loop. 4,363,004, Cl. 331-8.000.

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Tai, Anthony M., 4,363,106, Cl. 364-746.000.

Eoga, Anthony B. J., to Warner-Lambert Company. Cleanser with improved afterodor and tarnish resistance. 4,362,639, Cl. 252-99.000.

Equitable Bag Co., Inc.: *See—*
Wilson, James R., 4,362,526, Cl. 493-226.000.

Erdmann, Otto, to Hauni-Werke Korber & Co., KG. Apparatus for assembling arrays of cigarettes or the like. 4,362,235, Cl. 198-419.000.

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Erickson, John W., to Boltswitch, Inc. Load break switch with built-in ground fault sensing. 4,363,063, Cl. 361-48.000.
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Perrot, Friedrich, 4,362,396, Cl. 368-203.000.
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Richard, Christian; Kretz, Francis; and Benveniste, Albert, 4,363,103, Cl. 364-515.000.
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Orsini, Jean-Vitus, 4,362,975, Cl. 318-293.000.
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Gott, Hans; Ritter, Gerhard; Ritter, Klaus; and Ritter, Josef, 4,362,920, Cl. 219-56.000.
Evreka Inc.: *See*—
Cerami, Anthony, 4,362,711, Cl. 424-33.000.
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Heard, Richard A.; and Pierce, Aaron E., 4,362,413, Cl. 403-14.000.
Ortloff, John E.; and Wolfram, W. Robert, Jr., 4,362,325, Cl. 285-190.000.
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Agarwal, Pawan K.; and Thaler, Warren A., 4,362,828, Cl. 524-66.000.
Amick, James A., 4,361,950, Cl. 29-572.000.
Driver, Howard D., 4,362,590, Cl. 156-294.000.
Itzkowitz, Herman, 4,362,980, Cl. 318-685.000.
Kramer, George M.; Cox, Donald M.; Dines, Martin B.; and Maas, Edward T., Jr., 4,362,669, Cl. 260-429.100.
Young, Dale A., 4,362,630, Cl. 210-745.000.
Ezhkov, Vyacheslav P.: *See*—
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Ono, Syoji; Fukumoto, Yuji; and Yoshida, Tsunemasa, 4,362,661, Cl. 260-112.00B.

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Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,362,699, Cl. 422-131.000.

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GAL International Industries Inc.: *See*—
Lapsker, Itzchak, 4,361,987, Cl. 51-90.000.

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Gardner, Raymond K., Jr., to General Motors Corporation. Capacitance coupled eeprom. 4,363,109, Cl. 365-94.000.

Garnham, Edward E., to General Motors Corporation. Sunroof air deflector. 4,362,332, Cl. 296-217.000.

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Earl, Robert W.; and McCormack, William H., 4,362,067, Cl. 74-479.000.
Mason, John L.; and Emmerling, Robert C., 4,362,131, Cl. 123-41.100.

Garrett, Peter R.: *See*—
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Gee, Thomas A., to Eaton Corporation. Viscous fluid clutch and reservoir by-pass valve therefor. 4,362,226, Cl. 192-58.00B.

Gehrmann, Gerd-Peter; and Spiegel, Peter, to Von Roll AG. Apparatus for moving the filter plates of a filter press. 4,362,616, Cl. 210-225.000.

Gelman Sciences Inc.: *See*—
vonReis, Charles E.; Vadnay, Attila; and Corbett, Robert E., 4,362,047, Cl. 73-28.000.

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Brown, Robert E., 4,363,077, Cl. 361-400.000.
Cooper, Stephen M.; Shafer, Sheldon J.; and Tyrell, John A., 4,362,829, Cl. 524-84.000.
Cusano, Dominic A.; and Prener, Jerome S., 4,362,946, Cl. 250-483.000.
DeRemer, Harold A., 4,363,075, Cl. 361-383.000.
Eichelberger, Charles W.; Waldron, Wesley K.; and Wojnarowski, Robert J., 4,362,903, Cl. 174-94.00R.
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Fletcher, Thomas A., 4,363,086, Cl. 362-368.000.
Griffing, Bruce F., 4,362,598, Cl. 156-643.000.
Woodward, Stewart A., 4,362,912, Cl. 200-5.00B.

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Garnham, Edward E., 4,362,332, Cl. 296-217.000.
Harvey, Douglas J., 4,362,576, Cl. 148-2.000.
Lederman, Frederick E., 4,362,344, Cl. 308-187.100.
Malik, Marvin J., 4,362,133, Cl. 123-179.00K.
Radomski, Thomas A., 4,363,067, Cl. 361-91.000.

Gentric, Alain; and Le Rouzic, Jean. Quarter-turn-locking thermal connector. 4,362,286, Cl. 248-229.000.

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Gevers, Vincent M. Method of preparing indexes. 4,362,929, Cl. 235-432.000.

Gevondyan, Ara, to Raytheon Company. Integrated circuit and manufacturing method. 4,362,574, Cl. 148-1.500.

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Necsoiu, Ion-Jan; Bratu, Polidor P.; Ghinea, Aurelian; and Axinte, Gavril, 4,362,066, Cl. 74-87.000.

Ghosh, Anil C.; and Razdan, Raj K., to Miles Laboratories, Inc. N-Cyclopropylmethyl-14-ethoxymorphinan-6-one compounds exhibiting mixed analgesic/narcotic antagonist activity and precursors therefore. 4,362,733, Cl. 424-260.000.

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Gilbert, Richard, to Stanley Tools Limited. Retractable blade knife. 4,361,958, Cl. 30-162.000.

Gillet, Roger, to Societe Anonyme Dite: Alsthom-Atlantique. Spacer assembly for a stator venting duct of an electric power machine. 4,362,960, Cl. 310-65.000.

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Glaesmann, Otto-Ernst; Meyer, Frank; and Marsch, Walter, to Bergwerksverband GmbH. Tubular lost borehole closure. 4,362,440, Cl. 405-269.000.

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Goldsmith, Herbert; and Stilwell, Richard M., to Chemed Corporation. Self alarming five single electrodes conductivity cell. 4,362,994, Cl. 324-449.000.

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Gooden, Dewitt T., III: *See*—
Keritsis, Gus D.; Bokelman, Gordon H.; and Gooden, Dewitt T., III, 4,362,170, Cl. 131-309.000.

Goodman, Murray: *See*—
Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,362,699, Cl. 422-131.000.

Goodwin, Paul A.: *See*—
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Kline, Richard H., 4,362,887, Cl. 560-152.000.
Phillips, Martin A., Jr., 4,362,835, Cl. 524-317.000.

Gordon, Arnold Z.: *See*—
Hardee, Kenneth L.; Gordon, Arnold Z.; Pyle, Charles B.; and Sen, Rajat K., 4,362,707, Cl. 423-478.000.

Gorog, Istvan: *See*—
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Gorokhovsky, Veniamin; and Fradkin, Grigory. Erector. 4,362,152, Cl. 128-79.000.

Gott, Hans; Ritter, Gerhard; Ritter, Klaus; and Ritter, Josef, to EVG Entwicklungs-u. Verwertungs-Gesellschaft m.b.H. Double point resistance welding machine. 4,362,920, Cl. 219-56.000.

Gottlieb, Milton; and Brandt, Gerald B., to Electric Power Research Institute, Inc. Optical fiber temperature sensor. 4,362,057, Cl. 374-4.000.

Gottschalk, Robert E., to Panavision, Incorporated. Focal length extender. 4,362,366, Cl. 350-420.000.

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Cobaugh, Robert F.; and Graeff, Norwood C., 4,362,353, Cl. 339-258.00P.

Graff, Stewart M. Single-use sheet plastic closure for application to rimmed containers. 4,362,252, Cl. 220-270.000.

Graham, Bruce L.; and Littman, Iran R., to Illinois Tool Works Inc. Mounting post for holding a lighted electrical pushbutton switch. 4,363,087, Cl. 362-382.000.

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Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzutto, Anthony B., 4,362,757, Cl. 426-599.000.

Graham, Lionell, to Western Electric Company, Incorporated. Polymer coatings and methods of applying same. 4,362,783, Cl. 428-338.000.

Gramlich, Hans. Brake disc grinding method and apparatus. 4,361,988, Cl. 51-118.000.

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Grancoin, Bernard; and Pepin, Christian, to Thomson-CSF. Video picture generator photodetector. 4,363,034, Cl. 358-213.000.

Gray, James C.: *See*—
Turner, Charles S.; McNeal, Donald J.; Cheshier, Donald G.; and Gray, James C., 4,362,951, Cl. 307-66.000.

Green, Arthur A., to Tubeco, Inc. Pipe-bending die and method. 4,362,044, Cl. 72-388.000.

Green, James R. Friction hold wear bushing. 4,362,210, Cl. 166-85.000.

Greenaway, Paul R., to United States of America, Energy. Reactor component automatic grapple. 4,362,692, Cl. 376-268.000.

Greschat, Walter: *See*—
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Grevich, John J., to Nordson Corporation. Walking-beam band sealer. 4,362,593, Cl. 156-498.000.

Grier, Nathaniel: *See*—
Dybas, Richard A.; Witzel, Bruce E.; and Grier, Nathaniel, 4,362,877, Cl. 548-135.000.

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Griffing, Bruce F., to General Electric Company. Method of patterning a thick resist layer of polymeric plastic. 4,362,598, Cl. 156-643.000.

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Evans, Roger C.; Griffith, John E.; Grossman, David D.; Kutcher, Myron M.; and Will, Peter M., 4,362,977, Cl. 318-568.000.

Grinter, Trevor J.: *See*—
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Griscom, Billie G. Barbeque grill. 4,362,093, Cl. 99-339.000.
Grobben, Henri M.; and Decoster, Michel H. F., to U.S. Philips Corporation. Record player speed changing mechanism. 4,363,120, Cl. 369-267.000.
Grobler, Werner H., to Deere & Company. Power transmission part testing apparatus. 4,362,055, Cl. 73-162.000.
Grohmann, Helmut; and Stadler, Peter, to Veitscheer Magnesitwerke-Actien-Gesellschaft. Process of preparing sinter magnesia. 4,362,709, Cl. 423-636.000.
Grollier, Jean F.; Monnais, Christian; and Peritz, Lyonel, to Societe Anonyme dite: L'Oreal. Cosmetic composition for dyeing hair and process for using the same. 4,362,528, Cl. 8-406.000.
Grongstad, Oddvar, to A/S Kongsberg Vapenfabrikk. Shock absorber arrangement for mounting delicate equipment and shock absorber for use in the arrangement. 4,362,287, Cl. 248-563.000.
Gross, Jack R.: *See*—
Sears, Ronald J.; and Gross, Jack R., 4,362,911, Cl. 200-5.00A.
Gross, Rolf; and Fricker, Rene, to Sandoz Ltd. Dyeing auxiliaries containing mixed anionic, cationic and non-ionic ethylene oxide adducts. 4,362,530, Cl. 8-529.000.
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Grover, Wayne D., to Northern Telecom Limited. Method of and apparatus for monitoring digital transmission systems in which line transmission errors are detected. 4,363,123, Cl. 371-5.000.
GSE, Inc.: *See*—
Barrett, Gary L., 4,362,053, Cl. 73-121.000.
Shoberg, Ralph S., 4,362,218, Cl. 177-154.000.
GTE Automatic Electric Labs Inc.: *See*—
Comfort, Joseph A.; Perry, Thomas J.; and Loos, Michel, 4,363,096, Cl. 364-200.000.
Stern, David R., 4,362,957, Cl. 307-527.000.
GTE Products Corporation: *See*—
Cleveland, Joseph J., 4,362,209, Cl. 165-166.000.
Lovely, John D., 4,363,033, Cl. 358-181.000.
Rothwell, Harold L.; and Gungle, W. Calvin, 4,362,969, Cl. 315-73.000.
Guelph Manufacturing Group Ltd., The: *See*—
Theakston, Franklyn H., 4,362,025, Cl. 62-148.000.
Guerra, Rafael E.: *See*—
Vance, Fred L., Jr.; Guerra, Rafael E.; and Christenson, Christopher P., 4,362,654, Cl. 252-469.000.
Guerrato, Alfredo; and Perchinunno, Michele, to Glaxo Group Limited. Alkanoic acid derivatives. 4,362,891, Cl. 562-495.000.
Guiho, Jean P.: *See*—
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Gulf Oil Corporation: *See*—
Kirkpatrick, Joel L.; Patel, Natu R.; and Rutter, Jerry L., 4,362,879, Cl. 548-473.000.
Sabourin, Edward T.; and Selwitz, Charles M., 4,362,551, Cl. 71-106.000.
Gullichsen, Johan E., to Kamyr, Inc. Pulp degassing. 4,362,536, Cl. 55-52.000.
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Gupta, Amitava; and Yavrouian, Andre H., to California Institute of Technology. Ultraviolet absorbing copolymers. 4,362,895, Cl. 136-256.000.
Gupta, Prabhat K.: *See*—
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Gusto Engineering B.V.: *See*—
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H. F. Hanscom & Company, Inc.: *See*—
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Hafle, Ralph S., to BEI Electronics, Inc. Optical encoder having only one or two fiber optic cables. 4,362,358, Cl. 350-96.160.
Hager, Karl-Heinz, to Carl Zeiss-Stiftung. Two-axis mounting structure for a telescope. 4,362,354, Cl. 350-83.000.
Hagiwara, Sumio: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,362,772, Cl. 428-36.000.
Hagyuda, Nobuyoshi: *See*—
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Halcon SD Group, Inc., The: *See*—
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Halder, Mathis: *See*—
Schneider, Gernot; Trinkler, Werner; Halder, Mathis; Blazso, Eva; de Vries, Jocob; Schurmann, Konrad; and Muntwyler, Hans, 4,362,990, Cl. 324-117.00R.
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., to Outboard Marine Corporation. Dual pivot outboard motor with trim and tilt toggle linkage. 4,362,513, Cl. 440-61.000.
Halverson, James E. Chain saw bar with automatic tensioning. 4,361,960, Cl. 30-385.000.
Hamaoka, Tsutomu: *See*—
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Hamaya, Masahiro: *See*—
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Hamermesh, Charles L.: *See*—
Ratto, Joseph J.; and Hamermesh, Charles L., 4,362,860, Cl. 528-248.000.
Hamill, Robert L.; Huff, Gerald L.; Baltz, Richard H.; and Seno, Eugene T., to Eli Lilly and Company. Tylactone. 4,362,881, Cl. 549-271.000.
Hamilton, Earle B. Barrel lock ferrule extractor. 4,361,944, Cl. 29-256.000.
Hammer, Jacob M.; Kaiser, Charlie J.; and Neil, Clyde C., to RCA Corporation. Miniaturized symmetrization optics for junction laser. 4,362,367, Cl. 350-433.000.
Hanaoka, Naohiro, to Olympus Optical Co., Ltd. Thermomagnetic recording device. 4,363,052, Cl. 360-59.000.
Hanaoka, Naohiro, to Olympus Optical Co., Ltd. Magnetic recording device. 4,363,058, Cl. 360-122.000.
Hanaway, Roger D.; James, Larry R.; and Busboom, Garry W., to Allis-Chalmers Corporation. Tensioning mechanism for feeder conveyor positioned within feeder housing. 4,362,005, Cl. 56-14.600.
Hanscom, John F., to H. F. Hanscom & Company, Inc. Tying machine. 4,362,096, Cl. 100-10.000.
Hanson, Oliver D.: *See*—
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Hanson, Thomas A. Pipe unions. 4,362,043, Cl. 72-354.000.
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Hara, Shigeo: *See*—
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Harada, Chosei: *See*—
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Harada, Mashahiro: *See*—
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Haramoto, Yutaka; Ishigaki, Yukinobu; Totsuka, Kaoru; and Kawasaki, Takao, to Victor Company of Japan, Limited. Noise reduction system having series connected low and high frequency emphasis and de-emphasis filters. 4,363,007, Cl. 333-14.000.
Haramoto, Yutaka: *See*—
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Harasaki, Hayathugu; and Morimoto, Yoshihiro, to Tokyo Kogyo Co., Ltd. Automobile front body construction. 4,362,331, Cl. 296-194.000.
Hardaker, Edwin J.: *See*—
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Hardee, Kenneth L.; Gordon, Arnold Z.; Pyle, Charles B.; and Sen, Rajat K., to Diamond Shamrock Corporation. Preparation of chlorine dioxide with platinum group metal oxide catalysts. 4,362,707, Cl. 423-478.000.
Hardegen, Bernd: *See*—
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Hargreaves, Neil G.: *See*—
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Harmstorf, Rudolf, to Hydro-Jet System Establishment. Method and device for embedding cables or the like into an underwater ground. 4,362,436, Cl. 405-161.000.
Harper, Robert J., Jr., to United States of America, Agriculture. Radiation-resistant fluoroaromatic cellulosic ethers. 4,362,527, Cl. 8-194.000.
Harris, Allan; and Huff, Lemuel H., to Manville Service Corporation. Spirally-formed thermoplastic tube. 4,362,187, Cl. 138-109.000.
Harris, Hubert, to Peanut Research & Testing Labs., Inc. Method of producing a slurry from peanuts and crop foods. 4,362,759, Cl. 426-632.000.
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., to Continental Group, Inc., The. Blow molding clamp assembly. 4,362,498, Cl. 425-526.000.
Hartry, Donald R., to Remo, Inc. Laminated head of plastic sheet material and nonimpregnated synthetic woven fabric material. 4,362,081, Cl. 84-414.000.
Harvey, Douglas J., to General Motors Corporation. Method of making tin-base body solder and product. 4,362,576, Cl. 148-2.000.
Harvey, Robert J., to Halcon SD Group, Inc., The. Preparation of dibenzofuran. 4,362,883, Cl. 549-460.000.
Hasebe, Nobuhisa; Kawada, Hiroshi; and Kobatake, Tatsuo, to Nippon Kokan Kabushiki Kaisha. Apparatus for removing burrs from continuous cast slabs. 4,362,448, Cl. 409-300.000.

Hasegawa, Katsumi; Kawabata, Takahiro; and Ueda, Hiroshi, to Toray Industries, Inc. Yarn feeding apparatus. 4,362,260, Cl. 226-190.000.
Hasegawa, Shiro; and Gima, Sanehiro, to Nippon Oil and Fats Co. Ltd. Torque stabilizing method for fasteners and torque stabilized fasteners. 4,362,450, Cl. 411-258.000.
Hasegawa, Uohiko; Fujii, Yasuo; and Murakami, Tahachi. Interphase unbalance detector for AC load circuit. 4,363,065, Cl. 361-85.000.
Hashimoto, Norikazu: *See*—
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Hashimoto, Yasuyuki, to Ancos Co., Ltd. Mechanical pencil. 4,362,410, Cl. 401-67.000.
Haskel Engineering & Supply Company: *See*—
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Hauni-Werke Korber & Co., KG: *See*—
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Hausch, Daniel E.: *See*—
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Hause, Leroy R.; and Tsuchida, Dean Y., to Boeing Company, The. Differential nonmetals thickness gauge. 4,361,963, Cl. 33-143.00L.
Hauser, Kurt, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. K.G. Motor vehicle, especially a truck, with a cooling system for an internal combustion engine. 4,362,208, Cl. 165-51.000.
Hawkins, Ronald G.; and DeHart, Dwain L., to Aluminum Company of America. Splicing device. 4,362,352, Cl. 339-248.00S.
Hayakawa, Izumi: *See*—
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Hayashi, Tadayoshi; Kajitani, Ikuo; Ueno, Katsusuke; and Noritake, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Catalytic converter. 4,362,700, Cl. 422-179.000.
Hayashi, Tetsuaki: *See*—
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Heard, Richard A.; and Pierce, Aaron E., to Exxon Production Research Co. Retrievable connector assembly. 4,362,413, Cl. 403-14.000.
Heath, Alastair E. F.; Neville, David J.; Cockburn, Barry; and Bussey, Stephen, to Leslie Hartridge Limited. Flowmeter. 4,362,052, Cl. 73-119.00A.
Hedel, Rudolph H., to RCA Corporation. Workpiece loader. 4,362,236, Cl. 198-446.600.
Hedlund Manufacturing Co., Inc.: *See*—
Martin, Mervin G., 4,362,272, Cl. 239-7.000.
Heightley, John D.; and Eaton, Sargent S., Jr. Dummy cell arrangement for an MOS memory. 4,363,111, Cl. 365-210.000.
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Hembersin, Roland; and Nicaise, Remy, to Solvay & Cie. Process for the treatment of heavy products resulting from the manufacture of chlorohydrocarbons. 4,362,602, Cl. 203-59.000.
Hemmer, Valentine J.: *See*—
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Hengen, Edward J.; and Bassett, James H., to Deere & Company. Separator for an axial flow rotary combine. 4,362,168, Cl. 130-27.00H.
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Hennessee, John W. Lay out square. 4,361,964, Cl. 33-478.000.
Henry, John T. Apparatus for laying pipe. 4,362,435, Cl. 405-154.000.
Henry, Ronald A.; and Norris, William P., to United States of America, Navy. 1,9-Diazido-2,4,6,8-tetranitro-2,4,6,8-tetrazanonane. 4,362,583, Cl. 149-92.000.
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Herman, Robert W., to New World Computer Company, Inc. Magnetic transducer suspension device. 4,363,045, Cl. 360-104.000.
Herrmann, Lothar; and Muller, Helmut, to Kienzle Apparate GmbH. Preselection counter with continuous display and automatic repetition of a preset value. 4,362,927, Cl. 235-132.00R.
Hertzenberg, Elliot P.: *See*—
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Higashiguthi, Teruaki; and Ishioka, Mithio, to Okamura Oil Mill Limited. Polycarboxylic acid glycidyl esters and process for preparing the same. 4,362,871, Cl. 542-427.000.
Higgs, E. R.: *See*—
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High, Robert E. Partitioned centrifuge. 4,362,620, Cl. 210-378.000.
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Hill, Frank F.; Schindler, Joachim; Schmid, Rolf; Preuss, Wolfgang; and Struve, Alfred, to Henkel Kommanditgesellschaft auf Aktien. Process for the preparation of defective mutants of microorganisms. 4,362,815, Cl. 435-172.000.
Hill, Louis F., to Pacific Rim Equipment Corp. Portable log debarking apparatus. 4,362,195, Cl. 144-242.00R.
Hill, Ronald C., to Sandoz Ltd. Myotonolytic use of 4,5,6,7-tetrahydroisoxazolo [5,4-c] pyridin-3-ol and derivatives thereof. 4,362,731, Cl. 424-256.000.
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Hiltebrandt, Siegfried, to Richard Wolf GmbH. Endoscopes. 4,362,160, Cl. 128-303.150.
Hindley, Richard M.; and Baggaley, Keith H., to Beecham Group Limited. Hypolipidaemic compounds. 4,362,892, Cl. 564-374.000.
Hinterwaldner, Rudolf. One-component hardenable substances stable to storage and activatable by mechanical and/or physical forces and method of producing, activating and applying same. 4,362,566, Cl. 106-85.000.
Hirai, Minoru: *See*—
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Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; and Takeda, Masaaki, to Yamanouchi Pharmaceutical Co., Ltd. Guanidinothiazole compounds, and medical compositions containing them. 4,362,736, Cl. 424-270.000.
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Kuribayashi, Tetsuzo, 4,362,013, Cl. 60-39.020.
Machida, Yosihiro; Nakamura, Kenichi; Mifune, Takao; and Sugishima, Masayuki, 4,362,490, Cl. 425-128.000.

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Kallinke, Manfred; Bleuel, Walter; Hoehn, Wolfgang; and Heinrich, Kurt, 4,362,402, Cl. 368-317.000.

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Hof, Craig R.; and Ulin, Roy A., to Akzona, Inc. Temperature indicating compositions of matter. 4,362,645, Cl. 252-408.100.

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Franklin, Sidney B.; Garabedian, Arthur; Hoffman, Curtis S.; Huang, Marshall Y.; and Marcum, Robert B., 4,363,138, Cl. 455-226.000.

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Hunkeler, Walter; and Kyburz, Emilio, 4,362,732, Cl. 424-256.000.

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Ikari, Yoshikatsu; Yokoyama, Shiyoichiro; Katoh, Keisuke; Itaya, Ryutaro; and Kaga, Toshio, 4,362,571, Cl. 127-55.000.

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Hayashi, Tadayoshi; Kajitani, Ikuo; Ueno, Katsusuke; and Noritake, Yutaka, 4,362,700, Cl. 422-179.000.
Irimajiri, Shoichiro, 4,362,135, Cl. 123-193.00P.

Honeywell Inc.: *See*—
Castleman, B. Wayne; and Donehoo, Robert F., 4,362,941, Cl. 250-381.000.

Honeywell Information Systems Inc.: *See*—
Lange, Ronald E.; and King, Steve E., 4,363,108, Cl. 364-900.000.
McIver, Chandler H., 4,363,076, Cl. 361-386.000.
Woods, William E.; and Peters, Arthur, 4,363,095, Cl. 364-200.000.

Honma, Akira: *See*—
Osaka, Hiroshi; Honma, Akira; and Kizaki, Yoshio, 4,363,003, Cl. 331-1.00A.

Honma, Tsunetoshi: *See*—
Igarashi, Kikuo; and Honma, Tsunetoshi, 4,362,866, Cl. 536-16.800.

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Ellison, Burlan E.; Spranca, Harry P.; and Hooper, Christopher C., 4,361,998, Cl. 52-520.000.

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Imhoff, Lothar; Hoppe, Walter; and Bay, Wilhelm, 4,361,973, Cl. 37-58.000.

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Hormadaly, Jacob, to Du Pont de Nemours, E. I., and Company. Thick film resistor compositions. 4,362,656, Cl. 252-518.000.

Horowitz, Alvin E. Umbrella topiary framework. 4,361,982, Cl. 47-45.000.

Horton, Mark D. Method and apparatus for leak testing the interior of pipe. 4,362,049, Cl. 73-49.600.

Hosaka, Akio: *See*—
Abo, Toshimi; and Hosaka, Akio, 4,363,092, Cl. 364-200.000.

Hosem Reliable Protection System Ltd.: *See*—
Amgar, Abraham, 4,362,034, Cl. 70-108.000.

Houben, Marcellus J. P.: *See*—
Lemstra, Pieter J.; and Houben, Marcellus J. P., 4,362,844, Cl. 525-57.000.

Houston, Herbert J.: *See*—
Nigol, Olaf; and Houston, Herbert J., 4,362,900, Cl. 174-42.000.
Nigol, Olaf; and Houston, Herbert J., 4,362,901, Cl. 174-42.000.

HPM Corporation: *See*—
Cole, James C.; and Cronenwett, George F., 4,362,205, Cl. 164-109.000.

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Franklin, Sidney B.; Garabedian, Arthur; Hoffman, Curtis S.; Huang, Marshall Y.; and Marcum, Robert B., 4,363,138, Cl. 455-226.000.

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Littwin, Burkhard; and Huber, Wilhelm, 4,362,967, Cl. 313-493.000.

Huckaby, Leonard L. Bypass valve for sucker rod pumps. 4,362,478, Cl. 417-434.000.

Huff, Gerald L.: *See*—
Hamill, Robert L.; Huff, Gerald L.; Baltz, Richard H.; and Seno, Eugene T., 4,362,881, Cl. 549-271.000.

Huff, Lemuel H.: *See*—
Harris, Allan; and Huff, Lemuel H., 4,362,187, Cl. 138-109.000.

Hughes Aircraft Company: *See*—
Little, Michael J.; and Wong, Shi-Yin, 4,362,164, Cl. 128-639.000.
Nussmeier, Thomas A., 4,363,104, Cl. 364-515.000.

Hughes, Michael: *See*—
Wortley, Michael; Hughes, Michael; and Povey, Robert, 4,362,253, Cl. 220-276.000.

Hull, James R. Convertible child's bed. 4,361,919, Cl. 5-93.00B.

Hunger, Walter. Packing arrangement for a floating piston. 4,362,304, Cl. 277-27.000.

Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Diazepine derivatives and their use. 4,362,732, Cl. 424-256.000.

Huntron Instruments, Inc.: *See*—
Clinton, James R., 4,362,987, Cl. 324-52.000.

Huret, Roger H. M. Derailleur for a chainwheel assembly for a bicycle. 4,362,522, Cl. 474-82.000.

Huret, Rogert H. M., to Huret & Ses Fils. Derailleur for a cycle. 4,362,523, Cl. 474-82.000.

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Huret, Rogert H. M., 4,362,523, Cl. 474-82.000.

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Taylor, Chauncey D.; and Sims, Herbert E., 4,362,457, Cl. 414-345.000.

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Harmstorf, Rudolf, 4,362,436, Cl. 405-161.000.

Hydro-Quebec: *See*—
Srinivasan, Krishnaswamy; and Nguyen, Chinh T., 4,363,099, Cl. 364-484.000.

Hydrocarbon Research, Inc.: *See*—
Tabor, Paul R., 4,362,213, Cl. 166-267.000.

Ichiyanagi, Takashi: *See*—
Maruyama, Teruo; and Ichiyanagi, Takashi, 4,363,047, Cl. 360-107.000.

ICI Americas Inc.: *See*—
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,362,728, Cl. 424-249.000.

ICI Australia Limited: *See*—
Stubbs, Vincent K., 4,362,722, Cl. 424-219.000.

Idel, Karsten; Freitag, Dieter; Bottenbruch, Ludwig; and Merten, Josef, to Bayer Aktiengesellschaft. Process for the preparation of polyarylene sulphides. 4,362,864, Cl. 528-388.000.

Ienaka, Masanori: *See*—
Watanabe, Kazuo; Ienaka, Masanori; Kominami, Yasuo; and Homma, Makoto, 4,362,998, Cl. 329-103.000.

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Igashira, Toshihiko; Yoshida, Hitoshi; Nomura, Ken; and Abe, Seikou, to Nippon Soken, Inc. Fuel heating apparatus for internal combustion engine. 4,362,142, Cl. 123-549.000.

Igawa, Tatsuo: *See*—
Umeda, Takao; Igawa, Tatsuo; Simazaki, Yuzuru; Miyashita, Takao; and Nakano, Fumio, 4,362,771, Cl. 428-1.000.

Iguchi, Shigeru; and Oka, Shozi, to Mitsubishi Paper Mills Ltd. Processing solution composition for silver complex diffusion transfer process. 4,362,811, Cl. 430-455.000.
IHC Holland N.V.: *See*—
Visser, Teunis, 4,362,343, Cl. 308-170.000.
Ihochi, Takahiko; Tanaka, Masashi; Kojima, Kazuo; and Nakajima, Yutaka, to Hitachi, Ltd. Timepiece with alarm function including annular diaphragm to accommodate battery. 4,362,400, Cl. 368-255.000.
Ikari, Yoshikatsu; Yokoyama, Shiyoichiro; Katoh, Keisuke; Itaya, Ryutaro; and Kaga, Toshio, to Agency of Industrial Science & Technology; Sumitomo Jukikai Envirotech, Inc.; Hokkaido Soda Co., Ltd.; and Mitsui Sugar Co., Ltd. Method for refining sugar solutions. 4,362,571, Cl. 127-55.000.
Ikebe, Shoichi: *See*—
Matsuo, Yoshihiro; Itakura, Gen; Ikebe, Shoichi; and Wada, Tatsuya, 4,362,637, Cl. 252-62.3BT.
Ikeda, Hiroshi: *See*—
Seino, Junzaburo; Ikeda, Hiroshi; Abo, Washohati; Minami, Iwao; and Fuji, Joji, 4,362,273, Cl. 239-128.000.
Ikeda, Tadashi: *See*—
Mihara, Yuji; Ikeda, Tadashi; Takei, Haruo; Okazaki, Masaki; and Aotsuka, Yasuo, 4,362,813, Cl. 430-550.000.
Ikeda, Yoshiaki, to Seikosha Co., Ltd. Moving coil type printing head. 4,362,405, Cl. 400-121.000.
Ikegami, Shigeru; Hirai, Minoru; and Izumi, Kazuo, to Toho Beslon Co., Ltd. Process for the production of fibrous activated carbon. 4,362,646, Cl. 252-422.000.
Ikegawa, Masahiro: *See*—
Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, 4,363,012, Cl. 336-60.000.
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Illinois Tool Works Inc.: *See*—
Graham, Bruce L.; and Littman, Iran R., 4,363,087, Cl. 362-382.000.
Imada, Isuke; Sugihara, Hirosada; and Kawada, Mitsuru, to Takeda Chemical Industries, Ltd. Spiro compounds, their production and use. 4,362,740, Cl. 424-275.000.
Imai, Hiroto; and Arima, Sumito, to Mitsubishi Jukogyo Kabushiki Kaisha. Flexographic printing press. 4,362,104, Cl. 101-349.000.
Imai, Jun: *See*—
Yamazaki, Hitoshi; Ito, Hiroshi; Doi, Sadaharu; Imai, Jun; and Takada, Hiroshi, 4,362,123, Cl. 118-642.000.
Imai, Masumi: *See*—
Amano, Matsuo; Imai, Masumi; Sugawara, Toru; Sakamoto, Shinichi; Miki, Masayuki; and Sasayama, Takao, 4,363,097, Cl. 364-431.110.
Imaizumi, Ichiro; Kimura, Masatoshi; and Uehara, Keijiro, to Hitachi, Ltd. Method for making semiconductor device. 4,362,599, Cl. 156-647.000.
Imhoff, Lothar; Hoppe, Walter; and Bay, Wilhelm, to Zimmermann & Jansen Gesellschaft mit Beschrankter Haftung. Bulk material conveying for a pneumatic dredger. 4,361,973, Cl. 37-58.000.
Immuno Aktiengesellschaft fur chemisch-medizinische Produkte: *See*—
Schwarz, Otto; Linnau, Yendra; Loblich, Franz; and Seelich, Thomas, 4,362,567, Cl. 106-157.000.
Imperial Chemical Industries Limited: *See*—
Coffee, Ronald A., 4,362,275, Cl. 239-700.000.
Mackrodt, William C.; Jones, Richard B.; and Winterton, Neil, 4,362,573, Cl. 134-31.000.
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,362,728, Cl. 424-249.000.
Inagaki, Sanzi: *See*—
Tanaka, Susumu; Nagai, Koji; and Inagaki, Sanzi, 4,362,802, Cl. 430-106.600.
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Minamizono, Junji; Kishimoto, Shinzo; Yokoyama, Shigeki; and Inayama, Takayuki, 4,362,812, Cl. 430-528.000.
Indal Corporation: *See*—
Lee, Michael G., 4,363,055, Cl. 360-80.000.
Industrial Electronic Rubber Company: *See*—
Murray, Myles N., 4,362,786, Cl. 428-36.000.
Ingersoll-Rand Company: *See*—
Urquhart, Burton W., 4,362,622, Cl. 210-486.000.
Inose, Shuichi, to Canon Kabushiki Kaisha. Signal transducer. 4,363,040, Cl. 360-51.000.
Inoshita, Yasushi: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,362,268, Cl. 236-13.000.
Institut Francais du Petrole: *See*—
Bocard, Christian; and Lemesre, Maurice, 4,362,631, Cl. 210-776.000.
Chauvin, Yves; Commereuc, Dominique; Leger, Gerard; Gaillard, Jean; and Phung, Nhu H., 4,362,650, Cl. 252-431.00C.
Sparks, Charles, 4,362,215, Cl. 166-367.000.
Institute of Microbiology and Hygiene of the University of Montreal, The: *See*—
Bharucha, Kekhusroo R.; Tin, Kam C.; Ajdukovic, Iva; and Ajdukovic, Djordje, 4,362,746, Cl. 424-330.000.
Institutul de Cercetari in Constructii si Economia Constructiilor: *See*—
Necsoiu, Ion-Jan; Bratu, Polidor P.; Ghinea, Aurelian; and Axinte, Gavril, 4,362,066, Cl. 74-87.000.
Intel Corporation: *See*—
Pohlman, William B., III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., 4,363,091, Cl. 364-200.000.
International Business Machines Corp.: *See*—
Aichelmann, Frederick J., Jr., 4,363,124, Cl. 371-21.000.
Anderson, Howard W.; and Champ, Robert B., 4,362,798, Cl. 430-59.000.
Bahr, Dietrich J.; Briska, Marian; and Schackert, Klaus, 4,362,843, Cl. 525-54.230.
Brewer, James A.; and Lowy, John A., 4,363,125, Cl. 371-71.000.
Castrodale, Daniel O.; and Fournier, Thomas R., 4,363,044, Cl. 360-98.000.
Choberka, John M.; and Rex, Donald K., 4,362,406, Cl. 400-124.000.
Davis, Gordon T.; Faulkner, Edward H.; Gasparri, Angelo S.; Magee, Robert A.; Remsen, Lawrence P.; Saylor, Dennis L.; and Stricker, Alfred A., 4,362,486, Cl. 425-110.000.
Davis, Michael I.; and Sze, Daniel T. W., 4,363,093, Cl. 364-200.000.
Desilets, Brian H.; and Gunther, Thomas A., 4,362,596, Cl. 156-627.000.
Engler, Edward M.; Patel, Vishnubhai V.; and Schumaker, Robert R., 4,362,662, Cl. 260-239.00R.
Evans, Roger C.; Griffith, John E.; Grossman, David D.; Kutcher, Myron M.; and Will, Peter M., 4,362,977, Cl. 318-568.000.
Kalter, Howard L.; Kotecha, Harish N.; and Patel, Parsotam T., 4,363,110, Cl. 365-149.000.
Logan, Joseph S.; Petvai, Steve I.; and Rosu, Cornel, 4,362,611, Cl. 204-298.000.
Siverling, Michael M.; and Wheeler, Stephen E., 4,363,057, Cl. 360-98.000.
International Flavors & Fragrances Inc.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,362,657, Cl. 252-522.00R.
International Standard Electric Corporation: *See*—
Bolssens, Frans P. J.; Franck, Guy C. J. L. G. G. M.; and Dehertefelt, Henri, 4,361,941, Cl. 29-33.00M.
International Telephone and Telegraph Corporation: *See*—
von Harz, James L., 4,362,350, Cl. 339-143.00R.
Ionitakis, Nicolaos: *See*—
Forster, Siegfried; Ionitakis, Nicolaos; and Quell, Peter, 4,362,695, Cl. 376-314.000.
Iowa State University Research Foundation, Inc.: *See*—
Boybay, Mustafa; and Demirel, Turgut, 4,362,703, Cl. 423-116.000.
IPCO Corporation: *See*—
Carmon, Amiram; Claffey, Kevin; Lowe, Daniel; and Osipow, Lloyd, 4,362,165, Cl. 128-640.000.
Irimajiri, Shoichiro, to Honda Giken Kogyo Kabushiki Kaisha. Piston ring of internal combustion engine. 4,362,135, Cl. 123-193.00P.
Irwin, Lawrence F. Grip handle chuck. 4,361,924, Cl. 15-104.3SN.
Ishida, Hiroshi: *See*—
Sasaki, Koichi; Sumida, Yasuji; and Ishida, Hiroshi, 4,362,076, Cl. 83-285.000.
Ishida, Kohji, to Pioneer Electronic Corporation. FM Receiver. 4,362,906, Cl. 179-1.0GD.
Ishigaki, Yukinobu; and Haramoto, Yutaka, to Victor Company of Japan, Limited. Noise reduction system having series connected variable frequency filters. 4,363,006, Cl. 333-14.000.
Ishigaki, Yukinobu: *See*—
Haramoto, Yutaka; Ishigaki, Yukinobu; Totsuka, Kaoru; and Kawasaki, Takao, 4,363,007, Cl. 333-14.000.
Ishii, Haruo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focal plane shutter winding mechanism. 4,362,374, Cl. 354-242.000.
Ishii, Sumio: *See*—
Mizuno, Shogo; and Ishii, Sumio, 4,362,529, Cl. 8-471.000.
Ishii, Yoshio: *See*—
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; and Takeda, Masaaki, 4,362,736, Cl. 424-270.000.
Ishiodori, Makoto: *See*—
Kanamoto, Yoshitaka; and Ishiodori, Makoto, 4,363,053, Cl. 360-67.000.
Ishioka, Mithio: *See*—
Higashiguthi, Teruaki; and Ishioka, Mithio, 4,362,871, Cl. 542-427.000.
Ishizu, Junichi: *See*—
Yonezawa, Kazuya; Ishizu, Junichi; and Matsuura, Miyuki, 4,362,857, Cl. 528-174.000.
Ismail, Nassar. Universal adapters for modular plug telephones. 4,362,905, Cl. 179-1.0PC.
Isobe, Eiji; Hayakawa, Izumi; and Emura, Akira, to Mitsui Mining & Smelting Co., Ltd. Sintered metal bonded diamond abrasive articles. 4,362,535, Cl. 51-309.000.
Isobe, Hiroshi; Yoshino, Masao; and Fukushima, Koji, to Diesel Kiki Co., Ltd. Vibration absorber for centrifugal governor. 4,362,139, Cl. 123-364.000.
Isover Saint-Gobain: *See*—
Buck, Yves; and Delcoigne, Adrien, 4,361,995, Cl. 52-309.170.
Itakura, Gen: *See*—
Matsuo, Yoshihiro; Itakura, Gen; Ikebe, Shoichi; and Wada, Tatsuya, 4,362,637, Cl. 252-62.3BT.
Itaya, Ryutaro: *See*—
Ikari, Yoshikatsu; Yokoyama, Shiyoichiro; Katoh, Keisuke; Itaya, Ryutaro; and Kaga, Toshio, 4,362,571, Cl. 127-55.000.
Ito, Haruo: *See*—
Kajikawa, Shuji; Kanai, Kazuo; Ito, Haruo; Hirata, Yoshihisa; Konishi, Jiro; Takasaki, Yasuto; Ohkoshi, Kenji; and Yanagida, Yoshinobu, 4,362,504, Cl. 432-83.000.

Ito, Hiroshi: *See*—
Yamazaki, Hitoshi; Ito, Hiroshi; Doi, Sadaharu; Imai, Jun; and Takada, Hiroshi, 4,362,123, Cl. 118-642.000.

Itoh, Katsumi: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Minura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,362,983, Cl. 322-28.000.

Itoh, Kiyoo: *See*—
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,361,949, Cl. 29-571.000.

ITT Industries, Inc.: *See*—
Belart, Juan, 4,362,339, Cl. 303-117.000.
Drott, Peter, 4,362,225, Cl. 188-218.0XL.

Itzkowitz, Herman, to Exxon Research and Engineering Co. Position error recovery and motor control system. 4,362,980, Cl. 318-685.000.

Ivanova, Raisa V.: *See*—
Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E., 4,362,560, Cl. 75-63.000.

Iwaki, Katsutaro: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Minura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,362,983, Cl. 322-28.000.

Iwamoto, Masayuki, to Kabushiki Kaisha Shinoharatekkosho. Adjusting device for sheet reversing in a sheet-fed rotary press. 4,362,099, Cl. 101-230.000.

Iwamoto, Masayuki, to Kabushiki Kaisha Shinoharatekkosho. Sheet drawing device for a sheet-fed rotary press. 4,362,105, Cl. 101-410.000.

Iwashita, Tomonori: *See*—
Watanabe, Yoshitaka; and Iwashita, Tomonori, 4,362,371, Cl. 354-173.000.

Iwata, Hiroshi; and Yoshino, Tsunemi, to West Electric Co., Ltd. Automatic film transport device. 4,362,370, Cl. 354-173.000.

Izawa, Motowo: *See*—
Kida, Makoto; Izawa, Motowo; and Nakahama, Kazuo, 4,362,663, Cl. 260-239.30P.

Izumi, Kazuo: *See*—
Ikegami, Shigeru; Hirai, Minoru; and Izumi, Kazuo, 4,362,646, Cl. 252-422.000.

Izumi, Seto: *See*—
Toshiro, Tahara; and Izumi, Seto, 4,362,375, Cl. 354-320.000.

Jacklich, Jack. J Bolt. 4,362,511, Cl. 433-220.000.

Jackson, Graham: *See*—
Jenner, Michael R.; Waite, David; Jackson, Graham; and Williams, John C., 4,362,869, Cl. 536-122.000.

Jackson, Howard, to Elliott Brothers (London) Limited. Signal generating arrangements. 4,363,025, Cl. 340-347.0DA.

Jackson, Michael, to Timex Corporation. Multiplexed LCD analog timepiece. 4,362,398, Cl. 368-240.000.

Jacob, Adir, to LFE Corporation. Gas discharge apparatus. 4,362,632, Cl. 422-183.040.

Jacobson, Wayne M.: *See*—
Bentzen-Bilkvist, Ib; and Jacobson, Wayne M., 4,362,442, Cl. 406-109.000.

Jaeneke, Christian: *See*—
Romer, Rudolf; Jaeneke, Christian; and Sikorski, Gunter, 4,362,107, Cl. 102-520.000.

Jaeschke, Ralph L., to Eaton Corporation. Electromagnetic coupling and cooling system therefor. 4,362,958, Cl. 310-59.000.

James, Claude: *See*—
Bouchaudon, Jean; Farge, Daniel; and James, Claude, 4,362,716, Cl. 424-177.000.

James, Larry R.: *See*—
Hanaway, Roger D.; James, Larry R.; and Busboom, Garry W., 4,362,005, Cl. 56-14.600.

Jansz, Joost W., to Hollandsche Beton Groep N.V. Pile driving apparatus. 4,362,216, Cl. 173-131.000.

Jantzi, Albert T. Apparatus for moving large heavy objects. 4,362,458, Cl. 414-458.000.

Jefferson, John R.; and Cunliffe, Frank, to Lucas Industries Limited. Liquid fuel injection pumps. 4,362,140, Cl. 123-366.000.

Jenkins, John W., to Johnson, Matthey & Co., Limited. Catalyst or catalyst substrate. 4,362,655, Cl. 252-474.000.

Jenkner, Erwin. Conveyor system. 4,362,108, Cl. 104-94.000.

Jenner, Michael R.; Waite, David; Jackson, Graham; and Williams, John C., to Talres Development (N.A.) N.V. Process for the preparation of 4,1',6'-trichloro-4,1',6'-trideoxygalactosucrose. 4,362,869, Cl. 536-122.000.

Jerome, Robert J.: *See*—
Teyssie, Philippe T.; Jerome, Robert J.; and Broze, Guy J., 4,362,837, Cl. 524-400.000.

Jezbera, Val K., to Dataproducts Corporation. Flag strip for use in print hammers. 4,362,787, Cl. 428-572.000.

Jinkins, Danny R., to Black & Decker Inc. Vacuum cleaner tool having a two-position rotary brush. 4,361,929, Cl. 15-355.000.

Johansson, Borje: *See*—
Santen, Sven; and Johansson, Borje, 4,362,555, Cl. 75-11.000.

Johnson & Johnson Products, Inc.: *See*—
Buck, Carl J., 4,362,712, Cl. 424-49.000.
Buck, Carl J., 4,362,713, Cl. 424-54.000.
Lindquist, Julius A.; and Lukacs, George J., 4,362,762, Cl. 427-2.000.

Johnson, Matthey & Co., Limited: *See*—
Jenkins, John W., 4,362,655, Cl. 252-474.000.

Johnson, Robert R.; and Cantrell, Daniel V., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,362,171, Cl. 131-336.000.

Johnson, Robert R., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,362,172, Cl. 131-336.000.

Johnson, Thomas A.: *See*—
Ford, Michael E.; and Johnson, Thomas A., 4,362,886, Cl. 564-479.000.

Johnson, Wallace R., to Outboard Marine Corporation. Electric outboard motor construction. 4,362,512, Cl. 440-6.000.

Johnston, Frederick B. Medical process and preparation. 4,362,745, Cl. 424-319.000.

Jolly, Walter R.: *See*—
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,362,498, Cl. 425-526.000.

Jones, John P., to Purex Corporation. Sealing of phosphated coatings. 4,362,577, Cl. 148-6.15R.

Jones, Richard B.: *See*—
Mackrodt, William C.; Jones, Richard B.; and Winterton, Neil, 4,362,573, Cl. 134-31.000.

Joy Manufacturing Company: *See*—
Seitz, William R., 4,362,475, Cl. 417-295.000.

Joyce, Robert H.: *See*—
Black, David H. A.; Joyce, Robert H.; Daaboul, Fouad; and Le Van, Tiu, 4,363,122, Cl. 370-81.000.

Jupe, Christoph; Waldmann, Helmut; Baumert, Jurgen; and Schummer, Gunther, to Bayer Aktiengesellschaft. Process for the preparation of pyrocatechol and hydroquinone. 4,362,604, Cl. 203-75.000.

Just, Manfred: *See*—
Weniger, Manfred; and Just, Manfred, 4,363,017, Cl. 338-21.000.

Justad, Odd: *See*—
Buus, Henning; MacFie, Thomas D.; and Justad, Odd, 4,363,098, Cl. 364-434.000.

K. E. McConnaughay, Inc.: *See*—
Ostermeyer, Larry F., 4,362,568, Cl. 106-232.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Arai, Satoshi, 4,362,981, Cl. 318-696.000.
Mitamura, Gen; Eguchi, Takao; and Nagami, Yukio, 4,362,401, Cl. 368-309.000.

Kabushiki Kaisha Shinoharatekkosho: *See*—
Iwamoto, Masayuki, 4,362,099, Cl. 101-230.000.
Iwamoto, Masayuki, 4,362,105, Cl. 101-410.000.

Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Ogura, Mitsuhiro; and Saito, Toshio, 4,362,320, Cl. 280-802.000.
Usami, Susumu; Teranishi, Nobuyuki; Kuwako, Tomohisa; Sugiyama, Ikuo; Tsujiuchi, Yoshio; and Hara, Shigeo, 4,362,362, Cl. 350-289.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Arakawa, Akio, 4,362,190, Cl. 139-370.200.

Kadner, Max. Seating arrangements for poppet or non return valves. 4,362,185, Cl. 137-516.290.

Kaesgen, Hartmut: *See*—
Plamper, Gerhard R.; Kaesgen, Hartmut; and Rush, Robert W., Jr., 4,362,228, Cl. 192-0.094.

Kaga, Toshio: *See*—
Ikari, Yoshikatsu; Yokoyama, Shiyoichiro; Katoh, Keisuke; Itaya, Ryutaro; and Kaga, Toshio, 4,362,571, Cl. 127-55.000.

Kaimo, Matti, to Oy Lohja AB. Extension joint for concrete poles. 4,362,416, Cl. 403-316.000.

Kaimo, Matti: *See*—
Vesa, Markku; and Kaimo, Matti, 4,362,417, Cl. 403-317.000.

Kaiser, Charlie J.: *See*—
Hammer, Jacob M.; Kaiser, Charlie J.; and Neil, Clyde C., 4,362,367, Cl. 350-433.000.

Kajikawa, Shuji; Kanai, Kazuo; Ito, Haruo; Hirata, Yoshihisa; Konishi, Jito; Takasaki, Yasuto; Ohkoshi, Kenji; and Yanagida, Yoshinobu, to Nippon Kokan Kabushiki Kaisha. Apparatus for manufacturing a rapidly cooled solidified gas having rotating cooling drum. 4,362,504, Cl. 432-83.000.

Kajimoto, Norifumi: *See*—
Matsuzawa, Yoneo; Kawakami, Yoshio; and Kajimoto, Norifumi, 4,363,059, Cl. 360-132.000.

Kajitani, Ikuo: *See*—
Hayashi, Tadayoshi; Kajitani, Ikuo; Ueno, Katsusuke; and Noritake, Yutaka, 4,362,700, Cl. 422-179.000.

Kakumu, Masayoshi: *See*—
Matsui, Hiroshi; and Kakumu, Masayoshi, 4,363,018, Cl. 338-172.000.

Kalashnik, Oleg N.: *See*—
Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E., 4,362,560, Cl. 75-63.000.

Kalichman, Isidore: *See*—
Gelula, Jerome D.; Slanhoff, Bertram; and Kalichman, Isidore, 4,361,939, Cl. 24-211.00M.

Kalk, Walter; Schundehutte, Karl H.; and Soll, Manfred, to Bayer Aktiengesellschaft. Quaternary reactive compounds. 4,362,874, Cl. 544-317.000.

Kallinke, Manfred; Bleuel, Walter; Hoehn, Wolfgang; and Heinrich, Kurt, to VDO Adolf Schindling AG. Clock with a holder. 4,362,402, Cl. 368-317.000.

Kalter, Howard L.; Kotecha, Harish N.; and Patel, Parsotam T., to International Business Machines Corp. Non-volatile dynamic RAM cell. 4,363,110, Cl. 365-149.000.

Kamata, Kazumasa; Kishida, Kazuo; Ueda, Kazuo; and Osaka, Norihisa, to Mitsubishi Rayon Co., Ltd. Polyvinyl chloride-base resin and multistage graft resin composition. 4,362,845, Cl. 525-57.000.

Kamijo, Eiji: *See*—
Torigai, Eiichi; Wakabayashi, Noboru; Kawami, Yoji; Kamijo, Eiji; Nishimoto, Tatsuya; and Tani, Katsuhito, 4,362,647, Cl. 252-425.300.

Kaminaka, Nobuyuki: *See*—
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,362,767, Cl. 427-130.000.

Kamp, Ewald A., to Union Carbide Corporation. Closure device. 4,362,198, Cl. 150-3.000.

Kamyr, Inc.: *See*—
Gullichsen, Johan E., 4,362,536, Cl. 55-52.000.

Kanai, Kazuo: *See*—
Kajikawa, Shuji; Kanai, Kazuo; Ito, Haruo; Hirata, Yoshihisa; Konishi, Jiro; Takasaki, Yasuto; Ohkoshi, Kenji; and Yanagida, Yoshinobu, 4,362,504, Cl. 432-83.000.

Kanai, Kenji: *See*—
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,362,767, Cl. 427-130.000.

Kanamoto, Yoshitaka; and Ishiodori, Makoto, to Sony Corporation. Signal reproducing circuit. 4,363,053, Cl. 360-67.000.

Kanazawa, Yasunori: *See*—
Nishimura, Keizo; and Kanazawa, Yasunori, 4,363,039, Cl. 360-19.100.

Kane, Hugh. Fishing bobber. 4,361,978, Cl. 43-44.870.

Kane, William T.; and Whitney, William P., II, to Corning Glass Works. Furnace and method with sensor. 4,362,580, Cl. 148-16.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Fujita, Hiroyuki; Ashida, Shigeki; Taguchi, Yoshiaki; and Sakai, Masami, 4,362,760, Cl. 426-641.000.
Tonoki, Satoshi; Hirobe, Kazushi; Osawa, Tadashi; and Nishigaki, Masahiko, 4,362,839, Cl. 524-513.000.
Yonezawa, Kazuya; and Nagano, Hirosaku, 4,362,826, Cl. 525-426.000.
Yonezawa, Kazuya; Ishizu, Junichi; and Matsuura, Miyuki, 4,362,857, Cl. 528-174.000.

Kaneko, Hiroko; and Nozaki, Ken, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Redox battery. 4,362,791, Cl. 429-101.000.

Kao Soap Co., Ltd.: *See*—
Sakurai, Akira; and Mizutani, Hiroshi, 4,362,159, Cl. 128-285.000.

Kaplan, Leonard, to Union Carbide Corporation. Process for producing ethylene glycol and methanol. 4,362,820, Cl. 518-700.000.

Karady, Sandor: *See*—
Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,362,726, Cl. 424-248.510.

Karal, Donald W., to Schlegel Corporation. Cleaning brush for electrostatic copiers, printers and the like. 4,361,922, Cl. 15-1.50R.

Karasawa, Yukihiko: *See*—
Nakajima, Takeaki; Yoshimura, Tatsushiro; and Karasawa, Yukihiko, 4,362,162, Cl. 128-334.00R.

Karl, Alfons: *See*—
Panster, Peter; Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, 4,362,885, Cl. 556-446.000.

Karpale, Kauko J.: *See*—
Rastas, Jussi K.; Nyberg, Jens R.; Karpale, Kauko J.; and Bjorkqvist, Lars-Goran, 4,362,702, Cl. 423-41.000.

Kasanami, Tohru: *See*—
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,362,629, Cl. 210-714.000.

Kasei Optonix Ltd.: *See*—
Suzuki, Yujiro; Mirua, Norio; and Shimiya, Keiji, 4,362,944, Cl. 250-483.100.

Kassabov, Nikola K.: *See*—
Dakovski, Lyudmil G.; and Kassabov, Nikola K., 4,362,926, Cl. 235-92.0CC.

Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,362,315, Cl. 280-650.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Baby carriage. 4,362,315, Cl. 280-650.000.

Katahira, Sota; Tsukioka, Hideaki; Sakuma, Yutaka; and Higuchi, Hideo, to Keihin Hatsujyo Company Limited. Wire forming apparatus for torsion springs. 4,362,038, Cl. 72-130.000.

Kato, Takeo; and Fukuda, Nobuyoshi, to Toppan Printing Co., Ltd. Packing materials for molten contents. 4,362,784, Cl. 428-340.000.

Kato, Toshikazu: *See*—
Kimura, Kenji; Saitou, Sinichi; Nishiyama, Toyoo; Kato, Toshikazu; Shimoda, Misao; Watanabe, Seizo; Satoh, Ken; and Shibata, Tutomu, 4,363,042, Cl. 360-71.000.

Katoh, Keisuke: *See*—
Ikari, Yoshikatsu; Yokoyama, Shiyoichiro; Katoh, Keisuke; Itaya, Ryutaro; and Kaga, Toshio, 4,362,571, Cl. 127-55.000.

Katritzky, Alan R.: *See*—
Schultz, William J.; and Katritzky, Alan R., 4,362,785, Cl. 428-480.000.

Kaul, Pradeep; Wendling, Daniel; Ford, Harold; Muzamder, Deepak; and Newport, Christopher, to M/A-COM DDC, Inc. Communications processor. 4,363,094, Cl. 364-200.000.

Kaussner, John C.: *See*—
Parkison, Richard G.; Fischer, Armin O.; and Kaussner, John C., 4,362,186, Cl. 137-625.170.

Kawabata, Takahiro: *See*—
Hasegawa, Katsumi; Kawabata, Takahiro; and Ueda, Hiroshi, 4,362,260, Cl. 226-190.000.

Kawada Co., Ltd.: *See*—
Chatani, Yasushi, 4,361,980, Cl. 46-111.000.

Kawada, Hiroshi: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; and Kobatake, Tatsuo, 4,362,448, Cl. 409-300.000.

Kawada, Mitsuru: *See*—
Imada, Isuke; Sugihara, Hirosada; and Kawada, Mitsuru, 4,362,740, Cl. 424-275.000.

Kawaguchi, Kiyoshi: *See*—
Matsui, Kazuma; Kurahashi, Takashi; Suzuki, Masahiko; and Kawaguchi, Kiyoshi, 4,361,927, Cl. 15-250.420.

Kawai, Syuji: *See*—
Yamashita, Shuzo; Tanaka, Taku; Tanii, Hirokuni; Kubotsu, Akira; and Kawai, Syuji, 4,362,677, Cl. 264-41.000.

Kawakami, Yoshio: *See*—
Matsuzawa, Yoneo; Kawakami, Yoshio; and Kajimoto, Norifumi, 4,363,059, Cl. 360-132.000.

Kawami, Yoji: *See*—
Torigai, Eiichi; Wakabayashi, Noboru; Kawami, Yoji; Kamijo, Eiji; Nishimoto, Tatsuya; and Tani, Katsuhito, 4,362,647, Cl. 252-425.300.

Kawamura, Kouichi: *See*—
Takimoto, Masaaki; Sawada, Kenichi; and Kawamura, Kouichi, 4,362,800, Cl. 430-83.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, 4,362,468, Cl. 416-186.00R.

Kawasaki Steel Corporation: *See*—
Nakanishi, Teruyuki; Akune, Toshiyuki; Kusaba, Takashi; and Ehiro, Takashi, 4,362,041, Cl. 72-221.000.

Kawasaki, Takao: *See*—
Haramoto, Yutaka; Ishigaki, Yukinobu; Totsuka, Kaoru; and Kawasaki, Takao, 4,363,007, Cl. 333-14.000.

Kayser, Gaston, to Commissariat a l'Energie Atomique. Liquid metal-cooled nuclear reactor. 4,362,694, Cl. 376-298.000.

Kazami, Kazuyuki; and Hagyuda, Nobuyoshi, to Nippon Kogaku K.K. Camera having a data photographing device. 4,362,369, Cl. 354-106.000.

Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, to Nippon Kogaku K.K. Shutter control device for a camera having a shutter release lock device. 4,362,373, Cl. 354-234.000.

Kazami, Shinichi: *See*—
Ohtsuki, Tadashi; Kazami, Shinichi; Anjyu, Shinji; and Tanaka, Masato, 4,363,049, Cl. 360-13.000.

Keck, Johannes; Kruger, Gerd; Pieper, Helmut; Noll, Klaus; Engelhardt, Gunther; Promberger, Norbert; and Zimmermann, Rainer, to Dr. Karl Thomae GmbH. Esters and amides containing the 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-1H-indole-3-acetyl moiety. 4,362,738, Cl. 424-274.000.

Keeth, John D. Template for locating hypodermic injection sites. 4,362,157, Cl. 128-215.000.

Keihin Hatsujyo Company Limited: *See*—
Katahira, Sota; Tsukioka, Hideaki; Sakuma, Yutaka; and Higuchi, Hideo, 4,362,038, Cl. 72-130.000.

Kelly, Charles J., to Ribbecke, Thomas L., a part interest. Accentuator plate for vibrating soundboard in stringed musical instruments. 4,362,079, Cl. 84-291.000.

Kelly, John W., to Haskel Engineering & Supply Company. Jointed high pressure conduit. 4,362,324, Cl. 285-119.000.

Kelly, William F. Anchor for use in the post-tensioning of prestressed concrete. 4,362,421, Cl. 403-369.000.

Kelowna Nurseries Ltd.: *See*—
Dunstan, David I.; Turner, Keith E.; and Lane, David W., 4,361,984, Cl. 47-58.000.

KemaNord AB: *See*—
Andersson, Bengt; and Tanner, Olof, 4,362,778, Cl. 428-240.000.

Kemmner, Ulrich; and Ruhl, Karl, to Robert Bosch GmbH. Securing apparatus for electric fuel pumps. 4,362,476, Cl. 417-360.000.

Kempter, Karl: *See*—
Dannhauser, Friedrich; Kempter, Karl; Krausse, Jurgen; and Schnoller, Manfred, 4,362,766, Cl. 427-39.000.

Kendall, John S., to United States of America, Army. Composite/-laminated window for electron-beam guns. 4,362,965, Cl. 313-420.000.

Kennametal Inc.: *See*—
Armbrust, William D., 4,362,445, Cl. 408-182.000.

Kennedy, Alvin B.; and Leecraft, Bertram M., to Methods Engineering, Inc. Method and apparatus for cleaning basins. 4,362,628, Cl. 210-712.000.

Kennedy, Merrill V.; and Richards, Howard E. Cutting head assembly for a rotary motor. 4,362,007, Cl. 56-295.000.

Kerber, Richard F.: *See*—
Bowsky, Benjamin; Siegel, Allen E.; and Kerber, Richard F., 4,362,792, Cl. 429-181.000.

Keritsis, Gus D.; Bokelman, Gordon H.; and Gooden, Dewitt T., III, to Philip Morris, Incorporated. Tobacco curing method. 4,362,170, Cl. 131-309.000.

Kernforschungsanlage Julich GmbH: *See*—
Forster, Siegfried; Ionitakis, Nicolaos; and Quell, Peter, 4,362,695, Cl. 376-314.000.
Welter, Jean-Marie, 4,362,501, Cl. 432-11.000.

Kerschner, James J., to Acme Highway Products Corporation. Expansion seal. 4,362,428, Cl. 404-64.000.

Kerschner, James J.: *See*—
Puccio, Guy S.; and Kerschner, James J., 4,362,429, Cl. 404-68.000.

Kida, Makoto; Izawa, Motowo; and Nakahama, Kazuo, to Takeda Chemical Industries, Ltd. Maytansinoid compound. 4,362,663, Cl. 260-239.30P.

Kidd, Nash A., to Dow Chemical Company, The. Terpolymers of ethylene, vinyl acetate, and styrene as pour point depressants for distillate fuels. 4,362,533, Cl. 44-62.000.

Kidd, Patrick D.: *See*—
Oriowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,362,888, Cl. 560-162.000.

Kienzle Apparate GmbH: *See*—
Herrmann, Lothar; and Muller, Helmut, 4,362,927, Cl. 235-132.00R.

Kiesel, Kenneth C., to Polaroid Corporation. Focusing system and method with adjustment for lens depth of focus. 4,362,372, Cl. 354-195.000.

Kikuchi, Syuichi, to Murata Kikai Kabushiki Kaisha. False-twisting equipment. 4,362,011, Cl. 57-291.000.

Killat, Ulrich: *See*—
Dammann, Hans; and Killat, Ulrich, 4,362,359, Cl. 350-96.190.

Killgoar, Paul C., Jr.: *See*—
Tabar, Ronald J.; Killgoar, Paul C., Jr.; and Lemieux, Marvin A., 4,362,840, Cl. 524-525.000.

Kimoto, Ryuzo: *See*—
Takeuchi, Tatsuro; Sokukawa, Masaki; and Kimoto, Ryuzo, 4,362,626, Cl. 210-670.000.

Kimoto, Toyoki, to Laurel Bank Machine Co., Ltd. Sheet feeding control device for use in a coin wrapping machine. 4,363,032, Cl. 340-679.000.

Kimura, Hiroshi; Abiko, Kenji; Sato, Takashi; Yoshii, Isamu; Watanabe, Sadao; and Takei, Yutaka, to Sony Corporation. Magnetic alloy. 4,362,581, Cl. 148-31.550.

Kimura, Kenji; Saitou, Sinichi; Nishiyama, Toyoo; Kato, Toshikazu; Shimoda, Misao; Watanabe, Seizo; Satoh, Ken; and Shibata, Tutomu, to Olympus Optical Co., Ltd. Method and apparatus for automatically tracking a magnetic tape. 4,363,042, Cl. 360-71.000.

Kimura, Masatoshi: *See*—
Imaizumi, Ichiro; Kimura, Masatoshi; and Uehara, Keijiro, 4,362,599, Cl. 156-647.000.

Kimura, Yoshikazu: *See*—
Yonehara, Hiroyuki; Kimura, Yoshikazu; and Tanabe, Kenjiro, 4,362,383, Cl. 355-71.000.

Kinetronics Corporation: *See*—
Stelcher, William N., 4,362,145, Cl. 124-32.000.

King, Josef; and Ganter, Wolfgang, to Gebruder Junghans GmbH. Watch with a calendar display and hand setting device actuated by a setting shaft. 4,362,391, Cl. 368-34.000.

King, Steve E.: *See*—
Lange, Ronald E.; and King, Steve E., 4,363,108, Cl. 364-900.000.

Kinsbron, Eliezer: *See*—
Fraser, David B.; Kinsbron, Eliezer; and Vratny, Frederick, 4,362,597, Cl. 156-643.000.

Kira, Masaaki: *See*—
Kobayashi, Yukio; Kira, Masaaki; and Yamaguchi, Kinya, 4,362,680, Cl. 264-83.000.

Kirichenko, Vyacheslav A.: *See*—
Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E., 4,362,560, Cl. 75-63.000.

Kirk, Norbert A. Oscillating saw accessory. 4,361,956, Cl. 30-122.000.

Kirkby, Larry L.: *See*—
Tung, Lu H.; Kirkby, Larry L.; and Lyons, Charles E., 4,362,849, Cl. 525-316.000.

Kirkpatrick, Joel L.; Patel, Natu R.; and Rutter, Jerry L., to Gulf Oil Corporation. Isothioureido isoindolediones and use as plant growth regulators. 4,362,879, Cl. 548-473.000.

Kishida, Kazuo: *See*—
Kamata, Kazumasa; Kishida, Kazuo; Ueda, Kazuo; and Osaka, Norihisa, 4,362,845, Cl. 525-57.000.

Kishida, Toshio, to Daido Tokushuko, K.K. Arc furnace steelmaking involving oxygen blowing. 4,362,556, Cl. 75-12.000.

Kishimoto, Shinzo: *See*—
Minamizono, Junji; Kishimoto, Shinzo; Yokoyama, Shigeki; and Inayama, Takayuki, 4,362,812, Cl. 430-528.000.

Kisler, Semyon, to Polaroid Corporation. Neutralization of electrostatic charges. 4,363,070, Cl. 361-212.000.

Kitagawa, Naoto: *See*—
Masaki, Kunihiko; Kitagawa, Naoto; and Yamada, Kosaku, 4,362,319, Cl. 280-779.000.

Kitamura, Masatsugu; Onoye, Hideo; and Shimizu, Hiroki, to Victor Company of Japan, Limited. Circuit arrangement for skipping marked portions of a recording tape. 4,363,043, Cl. 360-72.100.

Kitao, Saburo: *See*—
Miyagi, Toshimi; and Kitao, Saburo, 4,363,074, Cl. 361-331.000.

Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Use of cyclohexyl phenethylether derivative in augmenting or enhancing the aromas of perfumes and colognes. 4,362,657, Cl. 252-522.00R.

Kizaki, Yoshio: *See*—
Osaka, Hiroshi; Honma, Akira; and Kizaki, Yoshio, 4,363,003, Cl. 331-1.00A.

Klausbruckner, Gert; and Tushaus, Bernd, to Steinbock GmbH. System for storing and transporting guided missiles and similar flying bodies. 4,362,459, Cl. 414-584.000.

Kleinschmit, Peter: *See*—
Panster, Peter; Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, 4,362,885, Cl. 556-446.000.

Klenk, Robert: *See*—
Krotz, Hermann; and Klenk, Robert, 4,361,957, Cl. 30-124.000.

Klepper, Constant L., to Micronic Filtration Inc. Liquid filtering apparatus. 4,362,617, Cl. 210-225.000.

Kleuters, Wilhelm J.; Gerritsen, Gerrit B.; and Verboom, Johannes J., to U.S. Philips Corporation. Method, apparatus and record carrier body for optically writing information. 4,363,116, Cl. 369-30.000.

Kline, Richard H., to Goodyear Tire & Rubber Company, The. Synergistic antioxidant mixtures. 4,362,887, Cl. 560-152.000.

Klingenberg, Hans U. Analog-display timepiece. 4,362,397, Cl. 368-233.000.

Klockner-Humboldt-Deutz AG: *See*—
Weigel, Horst; and Melcher, Gerhard, 4,362,561, Cl. 75-92.000.

Kluger, Edward W., to Milliken Research Corporation. Poly-(2-aminoalkyl)polyamines. 4,362,856, Cl. 528-111.000.

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Klupfel, Norbert: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; Dobhan, Herbert; Horling, Peter; and Klupfel, Norbert, 4,362,687, Cl. 264-318.000.

Knifton, John F., to Texaco Inc. Process for preparing acetic and propionic acids and their esters. 4,362,822, Cl. 518-700.000.

Kobatake, Tatsuo: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; and Kobatake, Tatsuo, 4,362,448, Cl. 409-300.000.

Kobayashi, Yukio; Kira, Masaaki; and Yamaguchi, Kinya, to Showa Denko K.K. Process for production of molded articles of acetylene polymer. 4,362,680, Cl. 264-83.000.

Kobe Steel, Ltd.: *See*—
Torii, Satoru, 4,362,018, Cl. 60-468.000.
Yamaguchi, Yoshihiro; Takatsuka, Kouro; Murakami, Shohel; Ogawa, Rikuo; Yamada, Yoshiro; Yokoyama, Tadamasa; and Akita, Shoji, 4,362,040, Cl. 72-201.000.

Koberstein, Edgar: *See*—
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,362,605, Cl. 204-1.00T.

Kobusch, Klaus, to Bollhoff & Co. Device for installing threaded bushes. 4,361,943, Cl. 29-240.000.

Koch, Robert C., Jr.; and Hickmann, Horst R., to American Commercial Barge Line Co. Self-latching hatch cover for barges. 4,362,118, Cl. 114-201.00R.

Koehler, Fulton: *See*—
Taner, Mehmet T.; Koehler, Fulton; Anstey, Nigel A.; and Castelberg, Michael J., 4,363,113, Cl. 367-63.000.

Koiwai, Yutaka: *See*—
Fujioka, Yoshiki; Koiwai, Yutaka; and Hirota, Mitsuhiko, 4,362,976, Cl. 318-341.000.

Koizumi, Mituyoshi; Akiyama, Nobuyuki; and Oshima, Yoshimasa, to Hitachi, Ltd. Method and apparatus for projection type mask alignment. 4,362,389, Cl. 356-401.000.

Kojima, Kazuo: *See*—
Ihochi, Takahiko; Tanaka, Masashi; Kojima, Kazuo; and Nakajima, Yutaka, 4,362,400, Cl. 368-255.000.

Kojima, Keiichi: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,363,019, Cl. 338-214.000.

Kojima, Makoto; and Yane, Hideki, to Nitto Electric Industrial Co., Ltd. Process for production of polyimide resins. 4,362,863, Cl. 528-353.000.

Kolm, Eric A.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,362,407, Cl. 400-124.000.

Kolm, Henry H.; and Kolm, Eric A., to Piezo Electric Products, Inc. Piezoelectric printer and piezoelectric multilam actuator used therein. 4,362,407, Cl. 400-124.000.

Kominami, Yasuo: *See*—
Watanabe, Kazuo; Ienaka, Masanori; Kominami, Yasuo; and Homma, Makoto, 4,362,998, Cl. 329-103.000.

Kondo, Eiji: *See*—
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,362,665, Cl. 260-245.20T.

Kondo, Hideyo; and Yashiki, Yuichi, to Canon Kabushiki Kaisha. Image-holding member with a curable epoxyacrylate resin insulating layer. 4,362,799, Cl. 430-67.000.

Konig, Wolfhard: *See*—
Schobbe, Hermann; Konig, Wolfhard; and Mohrmann, Werner, 4,362,294, Cl. 267-170.000.

Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, to Hitachi Chemical Co., Ltd. Process for preparing foundry cores or molds and binder materials used therefor. 4,362,203, Cl. 164-16.000.

Konishi, Jiro: *See*—
Kajikawa, Shuji; Kanai, Kazuo; Ito, Haruo; Hirata, Yoshihisa; Konishi, Jiro; Takasaki, Yasuto; Ohkoshi, Kenji; and Yanagida, Yoshinobu, 4,362,504, Cl. 432-83.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,362,810, Cl. 430-384.000.

Kontron Cardiovascular Inc.: *See*—
Lombardi, Edward J., Jr.; Neuman, Harold L.; Magro, Alfred E.; and Rishton, Michael L., 4,362,150, Cl. 128-1.00D.

Kooijmans, Petrus G.; Raudenbusch, Werner T.; Van Steenis, Adrianus M. C.; Kunze, Wolfgang; and Seelen-Kruijssen, Josepha M. E., to

Shell Oil Company. Heat-curable thermosetting resin binder compositions comprising a non-acidic resinous compound, a non-acidic polyester cross-linking agent, and a transesterification catalyst. 4,362,847, Cl. 525-172.000.

Kopse, Odon: *See—*
Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Kopse, Odon; Amaya, Nestor R.; Schlagenhauf, Josef; and Locher, Johannes, 4,362,050, Cl. 73-119.00A.

Korber, Helmut; Tacke, Peter; Fahnler, Friedrich; Neuray, Dieter; and Heydenreich, Frieder, to Bayer Aktiengesellschaft. Polyamide moulding compounds having high impact strength. 4,362,846, Cl. 525-66.000.

Kotecha, Harish N.: *See—*
Kalter, Howard L.; Kotecha, Harish N.; and Patel, Parsotam T., 4,363,110, Cl. 365-149.000.

Koubecky, Vladimir, to Felten & Guilleaume GmbH. Switching device for motor vehicle anti-theft system. 4,363,021, Cl. 340-65.000.

Kozhemyakin, Vladimir V.: *See—*
Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E., 4,362,560, Cl. 75-63.000.

Kramer, George M.; Cox, Donald M.; Dines, Martin B.; and Maas, Edward T., Jr., to Exxon Research and Engineering Co. Uranyl compounds employing a strong base. 4,362,669, Cl. 260-429.100.

Kramer, L. Jonathan: *See—*
Maltby, Frederick L.; and Kramer, L. Jonathan, 4,363,030, Cl. 340-511.000.

Krausse, Jurgen: *See—*
Dannhauser, Friedrich; Kempter, Karl; Krausse, Jurgen; and Schnoller, Manfred, 4,362,766, Cl. 427-39.000.

Kreiskott, Horst: *See—*
Steiner, Gerd; Teschendorf, Hans-Juergen; Kreiskott, Horst; and Hofmann, Hans P., 4,362,727, Cl. 424-248.510.

Kretz, Francis: *See—*
Richard, Christian; Kretz, Francis; and Benveniste, Albert, 4,363,103, Cl. 364-515.000.

Krick, Gerd, to Eduard Fresenius Chem.-Pharm. Industrie KG Apparatebau KG. Stiffening core for catheters. 4,362,163, Cl. 604-280.000.

Kripzak, Rudolf, to Kripzak, Rudolf. Handling system for workpieces. 4,362,454, Cl. 414-280.000.

Krishnakumar, Suppayan M.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,362,498, Cl. 425-526.000.

Kristof, George M.: *See—*
Ross, Robert M.; and Kristof, George M., 4,362,334, Cl. 297-230.000.

Kroener, Ulrich; Greschat, Walter; and Roemer, Peter, to Siemens Aktiengesellschaft. Multistage vacuum x-ray image intensifier. 4,362,933, Cl. 250-213.0VT.

Krotz, Hermann; and Klenk, Robert, to Robert Bosch GmbH. Pneumatic hand tool with vacuum debris removal. 4,361,957, Cl. 30-124.000.

Krueger, Ronald M.; and Sturdy, Harry D., to Sturdy Truck Equipment, Inc. Changeable length accelerator-carburetor-speed regulator linkage. 4,362,138, Cl. 123-342.000.

Kruger, Gerd: *See—*
Keck, Johannes; Kruger, Gerd; Pieper, Helmut; Noll, Klaus; Engelhardt, Gunther; Promberger, Norbert; and Zimmermann, Rainer, 4,362,738, Cl. 424-274.000.

Kruger, Jorg; Thome, Roland; Moritz, Dieter; Bings, Hubert; and Losert, Herbert, to Vereinigte Aluminium-Werke Aktiengesellschaft. Rotating apparatus for manufacturing hydrogen fluoride. 4,362,701, Cl. 422-194.000.

Krupp Polysius AG: *See—*
Eiring, Karl; and Loffler, Bernhard, 4,362,503, Cl. 432-80.000.

Kubis, Charles S.: *See—*
Roth, Donald J.; Kubis, Charles S.; and Walter, John, 4,362,254, Cl. 220-307.000.

Kubo, Masaharu: *See—*
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,361,949, Cl. 29-571.000.

Kubota, Ltd.: *See—*
Murayama, Yoshinobu; and Hayashi, Tetsuaki, 4,362,070, Cl. 74-691.000.

Kubotsu, Akira: *See—*
Yamashita, Shuzo; Tanaka, Taku; Tanii, Hirokuni; Kubotsu, Akira; and Kawai, Syuji, 4,362,677, Cl. 264-41.000.

Kuchenbecker, Morris W., to American Can Company. Liquid tight pouring carton. 4,362,245, Cl. 206-621.000.

Kuchinke, Josef: *See—*
Zapf, Otto; and Kuchinke, Josef, 4,362,336, Cl. 297-317.000.

Kuehne, Martin E., to S.A. Omnichem. Pyrrolo(2,3-d)carbazole derivatives, compositions and use. 4,362,739, Cl. 424-274.000.

Kugaya, Takashi: *See—*
Okayama, Tsutomu; and Kugaya, Takashi, 4,362,060, Cl. 73-708.000.

Kumata, Kiyoshi, to Sharp Kabushiki Kaisha. Electronic timepiece with message and/or alarm output capability. 4,362,392, Cl. 368-82.000.

Kumita, Norio; Ori, Takaaki; and Narita, Seiichi, to Nippondenso Co., Ltd. Collision detecting device. 4,362,913, Cl. 200-61.45R.

Kummler, Ralph H.; and Leite, Richard J., to Texas Gas Transmission Corporation. Pyrochemical processes for the decomposition of water. 4,362,690, Cl. 376-148.000.

Kunkel, Heinrich: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; Dobhan, Herbert; Horling, Peter; and Klupfel, Norbert, 4,362,687, Cl. 264-318.000.

Kunz Maschinen-U. Apparatebau GmbH, Firma: *See—*
Kunz, Wolfgang, 4,362,412, Cl. 403-11.000.

Kunz, Wolfgang, to Kunz Maschinen-U. Apparatebau GmbH, Firma. Coupling for removably connecting a rod to a driving shaft. 4,362,412, Cl. 403-11.000.

Kunze, Wolfgang: *See—*
Kooijmans, Petrus G.; Raudenbusch, Werner T.; Van Steenis, Adrianus M. C.; Kunze, Wolfgang; and Seelen-Kruijssen, Josepha M. E., 4,362,847, Cl. 525-172.000.

Kuo, Vincent H. S.; and Wamser, Christian A., to Allied Corporation. Aqueous basic polyaluminum-iron halide solutions. 4,362,643, Cl. 252-175.000.

Kurahashi, Takashi: *See—*
Matsui, Kazuma; Kurahashi, Takashi; Suzuki, Masahiko; and Kawaguchi, Kiyoshi, 4,361,927, Cl. 15-250.420.

Kuraray Co., Ltd.: *See—*
Minatono, Shobu; and Takamatsu, Hideo, 4,362,841, Cl. 524-531.000.
Yamashita, Shuzo; Tanaka, Taku; Tanii, Hirokuni; Kubotsu, Akira; and Kawai, Syuji, 4,362,677, Cl. 264-41.000.

Kurashima, Hideo. Decorative cufflink. 4,361,936, Cl. 24-41.000.

Kurek, Paul R., to UOP Inc. Preparation of C-nitrosodiarylamines from diarylamines. 4,362,893, Cl. 564-410.000.

Kuribayashi, Tetsuzo, to Hitachi, Ltd. Method for operating a combined plant. 4,362,013, Cl. 60-39.020.

Kurita, Yoshio: *See—*
Yokogawa, Shozo; Ohno, Isamu; and Kurita, Yoshio, 4,362,061, Cl. 73-861.240.

Kuroda, Shoei: *See—*
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, 4,362,203, Cl. 164-16.000.

Kuroda, Toshihiko; and Sugiyama, Kazuo, to Dentan Kabushiki Kaisha. Power conserving blocking oscillator power supply circuit. 4,363,005, Cl. 331-112.000.

Kusaba, Takashi: *See—*
Nakanishi, Teruyuki; Akune, Toshiyuki; Kusaba, Takashi; and Ehiro, Takashi, 4,362,041, Cl. 72-221.000.

Kutcher, Myron M.: *See—*
Evans, Roger C.; Griffith, John E.; Grossman, David D.; Kutcher, Myron M.; and Will, Peter M., 4,362,977, Cl. 318-568.000.

Kuwako, Tomohisa: *See—*
Usami, Susumu; Teranishi, Nobuyuki; Kuwako, Tomohisa; Sugiyama, Ikuo; Tsujiuchi, Yoshio; and Hara, Shigeo, 4,362,362, Cl. 350-289.000.

Kuznetsov, Jury A.: *See—*
Bukrinsky, Anatoly M.; Rzheznikov, Julian V.; Shvyryaev, Jury V.; Tatarnikov, Viktor P.; Lapshin, Alexandr L.; Sanovich, Vladimir I.; Zlatin, David A.; Kuznetsov, Jury A.; and Babenko, Evgeny A., 4,362,693, Cl. 376-298.000.

Kwater, James L., to Emerson Electric Co. Method for cutting vegetation. 4,362,074, Cl. 83-13.000.

Kwiatkowski, George T.: *See—*
Spector, Myron; Kwiatkowski, George T.; Smarook, Walter H.; and Michno, Michael J., Jr., 4,362,681, Cl. 264-112.000.

Kwiecinski, James R., to Westinghouse Electric Corp. Solderable solventless UV curable enamel. 4,362,263, Cl. 228-263.00A.

Kwoka, David: *See—*
Faucher, Joseph E.; Wright, Richard R.; Pane, Francis C., Jr.; and Kwoka, David, 4,362,022, Cl. 60-742.000.

Kyburz, Emilio: *See—*
Hunkeler, Walter; and Kyburz, Emilio, 4,362,732, Cl. 424-256.000.

L. C. Tool Distributors, Inc.: *See—*
Cloud, Don L., 4,362,073, Cl. 81-59.100.

La Belle, John T.: *See—*
Story, Gene F.; and La Belle, John T., 4,362,924, Cl. 219-497.000.

Laboratories de Mecaniques Appliquees "Lama": *See—*
Le Masson, Yves, 4,362,154, Cl. 128-204.220.

Lacy, Robert A.: *See—*
Burke, James J.; Douglass, Dale A.; Lacy, Robert A.; Murphy, Richard J.; Wilson, Delano D.; and Wright, Jonathan B., 4,362,986, Cl. 324-51.000.

Lampert, Albert J., to Cambria Spring Company. Suspension system including auxiliary spring for lightly loaded conditions. 4,362,318, Cl. 280-718.000.

Lamson & Sessions Co., The: *See—*
Crow, Glendon L., Jr., 4,362,042, Cl. 72-353.000.

Lancaster, Jesse F., to Dynatech Laboratories, Incorporated. Electrical jack and method of making same. 4,361,955, Cl. 29-884.000.

Landa, Benzion, to Savin Corporation. Large capacity combination magazine and sheet feeder for copying machines. 4,362,297, Cl. 271-152.000.

Landsman, Robert M., to Logescan Systems Inc. Method for manipulating and transporting image media. 4,362,805, Cl. 430-200.000.

Lane, David W.: *See—*
Dunstan, David I.; Turner, Keith E.; and Lane, David W., 4,361,984, Cl. 47-58.000.

Lang, Clifford E., Jr.: *See—*
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzutto, Anthony B., 4,362,757, Cl. 426-599.000.

Lang, Linton W.; and Stetson, Robert L., to Pacific Nuclear Fuels, Inc. Process of operating a nuclear reactor to minimize production of U-232. 4,362,691, Cl. 376-267.000.

Lange, Gerhard, to Siemens Aktiengesellschaft. Electrical terminal connection for the electrodes of a gas discharge over-voltage arrester. 4,362,962, Cl. 313-331.000.

Lange, Ronald E.; and King, Steve E., to Honeywell Information Systems Inc. Low cost programmable video computer terminal. 4,363,108, Cl. 364-900.000.

Langer, Manfred; and Siebels, Johann, to Volkswagenwerk Aktiengesellschaft. Article, such as a turbine rotor and blade which comprises a first zone of a nonoxide ceramic material and a second zone of a softer material. 4,362,471, Cl. 416-241.00B.

Lapshin, Alexandr L.: *See*—
Bukrinsky, Anatoly M.; Rzheznikov, Julian V.; Shvyryaev, Jury V.; Tatarnikov, Viktor P.; Lapshin, Alexandr L.; Sanovich, Vladimir I.; Zlatin, David A.; Kuznetsov, Jury A.; and Babenko, Evgeny A., 4,362,693, Cl. 376-298.000.

Lapsker, Itzchak, to GAL International Industries Inc. Apparatus for high tolerance polishing of a work-piece surface. 4,361,987, Cl. 51-90.000.

Large, Michael S.: *See*—
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,362,728, Cl. 424-249.000.

Larson, Melvin L., to Sybron Corporation. Catalyst composition for body temperature of liquid polythiopolymercaptan polymers for making elastomeric dental impressions. 4,362,649, Cl. 252-430.000.

Laube, Dennis; Hausch, Daniel E.; and Bell, Michael, to Countdown. Mobile service vehicle. 4,362,329, Cl. 296-26.000.

Laughman, Lanny M.: *See*—
Chenausky, Peter P.; Drinkwater, Erroll H.; and Laughman, Lanny M., 4,363,126, Cl. 372-38.000.

Laurel Bank Machine Co., Ltd.: *See*—
Furuya, Katusuke, 4,362,177, Cl. 133-8.00R.
Kimoto, Toyoki, 4,363,032, Cl. 340-679.000.
Uchida, Shinya, 4,362,112, Cl. 109-19.000.
Watanabe, Kenkichi, 4,362,176, Cl. 133-1.00A.

Lawler, Michael J. Attachment apparatus. 4,361,977, Cl. 43-44.830.

Lawson, Jack O. Manually mobile firewood log splitter. 4,362,194, Cl. 144-193.00R.

Laycock, Ralph G. Apparatus and method for oscillating the tape of a tape player. 4,363,054, Cl. 360-72.100.

Leach, Charles W.; McElroy, Jerry W.; and Donnelly, Donald E., to Emerson Electric Co. Snap-on cover for bobbin-wound coil assembly. 4,363,014, Cl. 336-90.000.

Leaf, Harry V.: *See*—
Mazzola, Ralph; and Leaf, Harry V., 4,361,942, Cl. 29-33.00M.

Leary, Sean J. Apparatus for providing a liquid free working environment on submerged surfaces. 4,362,437, Cl. 405-188.000.

Le Chatelier, Jacques, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Anti-balloon devices of spinning frames. 4,362,012, Cl. 57-355.000.

Lechner, Uwe: *See*—
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,362,725, Cl. 424-246.000.

Lederman, Frederick E., to General Motors Corporation. Sealed ball bearing with stamped races. 4,362,344, Cl. 308-187.100.

Lee, Cheng-Shun. Digital indicating system for fuel quantity of a vehicle or the like. 4,362,056, Cl. 73-317.000.

Lee, Henry C.: *See*—
Campagnuolo, Carl J.; and Lee, Henry C., 4,362,106, Cl. 102-207.000.

Lee, Michael G., to Indal Corporation. Control system for audio-visual projector. 4,363,055, Cl. 360-80.900.

Lee, Richard J., to Standard Oil Company (Indiana). Substituted orthoquinone dimer. 4,362,668, Cl. 260-396.00R.

Lee, Sheng Y., to United States of America, National Aeronautics and Space Administration. Method of neutralizing the corrosive surface of amine-cured epoxy resins. 4,362,769, Cl. 427-322.000.

Leecraft, Bertram M.: *See*—
Kennedy, Alvin B.; and Leecraft, Bertram M., 4,362,628, Cl. 210-712.000.

Leep, Gus W.; and Bolt, Gary L., to Seymour of Sycamore, Inc. Solvent resin emulsion gloss coating composition. 4,362,838, Cl. 524-444.000.

Leesona Corporation: *See*—
Brouwer, Charles W.; and Cowan, Larry C., 4,362,189, Cl. 139-336.000.

LeFaou, Daniel: *See*—
Andrieu, Louis; Bernard, Jean; Beyl, Jean; LeFaou, Daniel; Peyre, Henri; and Veniat, Jacky, 4,362,313, Cl. 280-628.000.

Lefevre, Lloyd E.; and Stevenson, Fred, to Dow Chemical Company, The. Extrusion-grade vinylidene chloride copolymer compositions and films prepared therefrom. 4,362,834, Cl. 524-297.000.

Lefferts, Johannes; and Roelofs, Roelof, to Siteg Siebtechnik GmbH. Sieve belt with filler material. 4,362,776, Cl. 428-222.000.

Leger, Gerard: *See*—
Chauvin, Yves; Commereuc, Dominique; Leger, Gerard; Gaillard, Jean; and Phung, Nhu H., 4,362,650, Cl. 252-431.00C.

Lehmann, Klaus, to Robert Bosch GmbH. Method and apparatus for signal pick-up from semiconductor image or line sensors. 4,363,035, Cl. 358-213.000.

Leite, Richard J.: *See*—
Kummler, Ralph H.; and Leite, Richard J., 4,362,690, Cl. 376-148.000.

Lelandais, Guy, to Enertec. Dual capstan tape transport having controlled tape tension. 4,363,041, Cl. 360-71.000.

Le Masson, Yves, to Laboratories de Mecaniques Appliquees "Lama", a part interest. Processes and devices for regulating the oxygen partial pressure of the gas mixture of the respiratory circuit of a diver. 4,362,154, Cl. 128-204.220.

Lemesre, Maurice: *See*—
Bocard, Christian; and Lemesre, Maurice, 4,362,631, Cl. 210-776.000.

Lemieux, Marvin A.: *See*—
Tabar, Ronald J.; Killgoar, Paul C., Jr.; and Lemieux, Marvin A., 4,362,840, Cl. 524-525.000.

Lemieux, Raymond U.; and Ratcliffe, R. Murray, to Chembiomed Ltd. Synthesis of 2-amino-2-deoxyglycoses and 2-amino-2-deoxyglycosides from glycals. 4,362,720, Cl. 424-180.000.

Lemstra, Pieter J.; and Houben, Marcellus J. P., to Stamicarbon, B.V. Biaxially stretched polypropylene-based plastic products, and process for making such products. 4,362,844, Cl. 525-57.000.

Lena, Paolo. Synthetic bag-type container for human blood and its fractions, perfusion solutions, dialysis solutions and alimentary and chemical liquids in general. 4,362,158, Cl. 128-272.000.

Leonard, Charles A.: *See*—
Cale, Albert D., Jr.; and Leonard, Charles A., 4,362,667, Cl. 548-557.000.

Le Rouzic, Jean: *See*—
Gentric, Alain; and Le Rouzic, Jean, 4,362,286, Cl. 248-229.000.

Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., to Sterling Drug Inc. 2-(Substituted-amino)-5-(pyridinyl-nicotinonitriles, and their cardiotonic use. 4,362,734, Cl. 424-263.000.

Lesher, George Y.; and Brundage, Ruth P., to Sterling Drug Inc. 3-[(3-Oxo-1-butenyl)amino]-5-(pyridinyl)-2(1H)-pyridinones and their cardiotonic use. 4,362,735, Cl. 424-263.000.

Leslie Hartridge Limited: *See*—
Heath, Alastair E. F.; Neville, David J.; Cockburn, Barry; and Bussey, Stephen, 4,362,052, Cl. 73-119.00A.

L'Etat Francais represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunications): *See*—
Richard, Christian; Kretz, Francis; and Benveniste, Albert, 4,363,103, Cl. 364-515.000.

Le Van, Tiu: *See*—
Black, David H. A.; Joyce, Robert H.; Daaboul, Fouad; and Le Van, Tiu, 4,363,122, Cl. 370-81.000.

Levenson, Michael K., to Pyrodex Corporation. Method for binary propellant. 4,362,584, Cl. 149-109.600.

Lever Brothers Company: *See*—
Carter, Malcolm N. A.; and Garrett, Peter R., 4,362,642, Cl. 252-174.160.
McNeill, Avril B.; and Hargreaves, Neil G., 4,362,758, Cl. 426-603.000.

Levitt, George; and Smith, William F., III, to Du Pont de Nemours, E. I., and Company. Method of increasing sugar content in sugarcane and sorghum. 4,362,549, Cl. 71-92.000.

Levolor Lorentzen, Inc.: *See*—
Roland, George R., 4,363,082, Cl. 362-148.000.
Smith, Robert L., 4,361,996, Cl. 52-484.000.

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Meyer, Walter, 4,362,231, Cl. 193-2.00R.

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Bond, Curtis J., 4,362,255, Cl. 222-107.000.

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Graham, Bruce L.; and Littman, Iran R., 4,363,087, Cl. 362-382.000.

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Cook, Francis W., Jr., 4,362,261, Cl. 228-2.000.

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Smith, Albert H., 4,362,364, Cl. 350-358.000.

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Wilhelm, Gary, 4,361,975, Cl. 42-69.00R.

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Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Kopse, Odon; Amaya, Nestor R.; Schlagenhauf, Josef; and Locher, Johannes, 4,362,050, Cl. 73-119.00A.

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Meyer, John W.; Daniel, Arnold D., Jr.; and Bonin, John H., 4,362,441, Cl. 406-14.000.
Ramsay, William R.; and Spilker, James J., Jr., 4,363,130, Cl. 455-27.000.

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Logan, Joseph S.; Petvai, Steve I.; and Rosu, Cornel, to International Business Machines Corporation. Quadrupole R.F. sputtering system having an anode/cathode shield and a floating target shield. 4,362,611, Cl. 204-298.000.

Logescan Systems Inc.: *See—*
Landsman, Robert M., 4,362,805, Cl. 430-200.000.

Lombardi, Edward J., Jr.; Neuman, Harold L.; Magro, Alfred E.; and Rishton, Michael L., to Kontron Cardiovascular Inc. Percutaneous intra-aortic balloon apparatus. 4,362,150, Cl. 128-1.00D.

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Comfort, Joseph A.; Perry, Thomas J.; and Loos, Michel, 4,363,096, Cl. 364-200.000.

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Lowe, Daniel: *See—*
Carmon, Amiram; Claffey, Kevin; Lowe, Daniel; and Osipow, Lloyd, 4,362,165, Cl. 128-640.000.

Lowy, John A.: *See—*
Brewer, James A.; and Lowy, John A., 4,363,125, Cl. 371-71.000.

Lucas, Bernard H.: *See—*
Ritcey, Gordon M.; Price, Kenneth T.; and Lucas, Bernard H., 4,362,607, Cl. 204-108.000.

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Jefferson, John R.; and Cunliffe, Frank, 4,362,140, Cl. 123-366.000.
Mowbray, Dorian F., 4,362,141, Cl. 123-449.000.
Tumber, Brian W., 4,363,073, Cl. 361-292.000.

Luebke, Clement J.; and Daniels, Lowell W., to Alco Standard Corporation. Cooking device with cover locking means. 4,362,148, Cl. 126-369.000.

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Lutterman, Richard C.: *See—*
Metz, Joseph R.; and Lutterman, Richard C., 4,362,415, Cl. 403-109.000.

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Tung, Lu H.; Kirkby, Larry L.; and Lyons, Charles E., 4,362,849, Cl. 525-316.000.

Lyons, Michael D., to American Standard Inc. Inhibit locks for marine engine controller. 4,362,516, Cl. 440-85.000.

M/A-COM DDC, Inc.: *See—*
Kaul, Pradeep; Wendling, Daniel; Ford, Harold; Muzamder, Deepak; and Newport, Christopher, 4,363,094, Cl. 364-200.000.

M.A.N.-Roland, Druckmaschinen Aktiengesellschaft: *See—*
Despot, Janko, 4,362,102, Cl. 101-348.000.

M.A.N. Uternehmensbereich G.H.H. Sterkrade: *See—*
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MacFie, Thomas D.: *See—*
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Machida, Yosihiro; Nakamura, Kenichi; Mifune, Takao; and Sugishima, Masayuki, to Hitachi, Ltd. Molding apparatus for stator of rotary electric machine. 4,362,490, Cl. 425-128.000.

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MacLean, Donald L., to Monsanto Company. Hydrocracking processes having an enhanced efficiency of hydrogen utilization. 4,362,613, Cl. 208-108.000.

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Hlinsky, Emil J., 4,362,449, Cl. 411-156.000.

MacPhee, John; and Barton, William W., to Baldwin-Gegenheimer Corporation. Method and apparatus for controlling ink viscosity. 4,362,179, Cl. 137-3.000.

Maeda, Hiroshi; and Nishi, Katsuhide, to Yamanouchi Pharmaceutical Co., Ltd. Agent for curing peripheral circulation insufficiency. 4,362,718, Cl. 424-177.000.

Maeda, Masaya; Hirata, Noritsugu; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Video tape recorder arranged to be connected with a video camera. 4,363,051, Cl. 360-33.100.

Magee, Robert A.: *See—*
Davis, Gordon T.; Faulkner, Edward H.; Gasparri, Angelo S.; Magee, Robert A.; Remsen, Lawrence P.; Saylor, Dennis L.; and Stricker, Alfred A., 4,362,486, Cl. 425-110.000.

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Sinka, Gabor; Miskei, Mihaly; Toth, Ferenc; Revesz, Laszlo; and Schlegel, Miklos, 4,362,606, Cl. 204-105.00R.

Mahle GmbH: *See—*
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Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,362,725, Cl. 424-246.000.

Majesky, Stephen L.: *See—*
Schneider, Richard E.; and Majesky, Stephen L., 4,362,904, Cl. 174-138.00G.

Malcolm, Bruce G.; and Binninger, Robert E., to Wavetek Indiana, Inc. L-C Filter with impedance transformers. 4,363,009, Cl. 333-177.000.

Malik, Marvin J., to General Motors Corporation. Automatic engine shutdown and restart system. 4,362,133, Cl. 123-179.00K.

Malinowski, Roman. Method of casting concrete. 4,362,679, Cl. 264-82.000.

Mallinckrodt, Inc.: *See—*
Furler, Alan G.; and Stoddard, Philip V., 4,362,166, Cl. 128-670.000.

Mallory, James D., to Owens-Illinois, Inc. Fluid control system for glassware forming machine. 4,362,544, Cl. 65-163.000.

Mallory, Jeffrey B.; and Campbell, Charles M. Pneumatic tube carrier end closure adapter unit. 4,362,443, Cl. 406-188.000.

Maloney, Daniel L.: *See—*
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Maltby, Frederick L.; and Kramer, L. Jonathan, to Drexelbrook Engineering Company. Fail-safe instrument system. 4,363,030, Cl. 340-511.000.

Manacci, Lawrence F. Self cancelling motorcycle turn signal which recognizes balance. 4,363,022, Cl. 340-73.000.

Manning, Donald L. Vehicle drive wheel suspension. 4,362,221, Cl. 180-73.00R.

Mannschke, Lothar P., to U.S. Philips Corporation. Socket for a detachable plug and socket connection for coupling an optical fiber and detector arrangement to a light source. 4,362,360, Cl. 350-96.200.
Manville Service Corporation: *See*—
Harris, Allan; and Huff, Lemuel H., 4,362,187, Cl. 138-109.000.
Swaidner, James A.; and Holzhauer, Wendell C., 4,362,676, Cl. 264-35.000.
Wensing, David G., 4,362,823, Cl. 521-116.000.
Manzoni, Stephane, to Societe Anonyme dite: Manzoni-Bouchot. Remote control device for outside rearview mirror adjustable from inside of a motor vehicle. 4,362,068, Cl. 74-501.00M.
Marabeas, Iakovos. Valve with spring biased seal. 4,362,184, Cl. 137-516.290.
Marconi Instruments Limited: *See*—
Menlove, Robert P., 4,362,394, Cl. 368-118.000.
Marcum, Robert B.: *See*—
Franklin, Sidney B.; Garabedian, Arthur; Hoffman, Curtis S.; Huang, Marshall Y.; and Marcum, Robert B., 4,363,138, Cl. 455-226.000.
Mares, Frank: *See*—
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Markel Corporation: *See*—
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Markle, David A.: *See*—
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Marko Materials, Inc.: *See*—
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,362,553, Cl. 75-0.5BA.
Marling, Douglas S. Space dividing assembly. 4,362,251, Cl. 220-22.000.
Marsch, Walter: *See*—
Glaesmann, Otto-Ernst; Meyer, Frank; and Marsch, Walter, 4,362,440, Cl. 405-269.000.
Marteau d'Autry, Eric. Device for sampling and dispensing adjustable volumes of liquid, with numerical display. 4,362,063, Cl. 73-864.100.
Marteau d'Autry, Eric. Positive-displacement pipette. 4,362,064, Cl. 73-864.130.
Martin, Jon W., to TRW Inc. Sulfided carbonaceous materials and vulcanized and vulcanizable rubber compositions reinforced with such carbonaceous materials. 4,362,569, Cl. 106-307.000.
Martin Marietta Corporation: *See*—
Clark, Benton C., III, 4,362,935, Cl. 378-48.000.
Martin, Mervin G., to Hedlund Manufacturing Co., Inc. Manure spreader with multiple side auger. 4,362,272, Cl. 239-7.000.
Martin, Michael D., to RFD Inflatables Limited. Inflatable liferafts. 4,362,517, Cl. 441-41.000.
Martinez Corral, Cecilio, to Fraymon S.A.E. Motor vehicle clutch mechanism. 4,362,230, Cl. 192-109.00R.
Maru, Hansraj C.; and Baker, Bernard S., to Energy Research Corporation. Fuel cell system with anode and cathodes operating at different pressures. 4,362,788, Cl. 429-13.000.
Maruko, Saburo; and Yamada, Kenji. Sun following-up device for solar heat utilization apparatus. 4,362,931, Cl. 250-203.00R.
Maruyama, Teruo; and Ichiyanagi, Takashi, to Matsushita Electric Industrial Co., Ltd. Rotary head assembly for magnetic recording and reproducing device. 4,363,047, Cl. 360-107.000.
Maruyama, Toshinori: *See*—
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Marx, Michael K.; and Musante, Louis P., to Westminster Marketing, Inc. Mold for plastic needlepoint sheet. 4,362,290, Cl. 249-60.000.
Marzocchi, Alfred; and Shannon, Richard F., to Owens-Corning Fiberglas Corporation. Fiber reinforced membrane paving construction. 4,362,780, Cl. 428-283.000.
Masaki, Kunihiko; Kitagawa, Naoto; and Yamada, Kosaku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering assembly supporting device of a motor vehicle. 4,362,319, Cl. 280-779.000.
Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Surkamp, Paul; and Brock, Josef, 4,362,188, Cl. 139-76.000.
Mase, Akira: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Minura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,362,983, Cl. 322-28.000.
Masjuk, Galina E.: *See*—
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Mason, John L.; and Emmerling, Robert C., to Garrett Corporation, The. Engine cooling system. 4,362,131, Cl. 123-41.100.
Mass, Ronald H.; and Maloney, Daniel L., to Schlegel Corporation. Sealing strip. 4,362,427, Cl. 404-64.000.
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Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., to CNG Research Company. Pressure relief system. 4,362,181, Cl. 137-68.00R.
Massingill, John L., Jr.: *See*—
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,362,848, Cl. 525-193.000.
Masson, Pierre L.: *See*—
de Steenwinkel, Floris; Collet-Cassart, Daniel; and Masson, Pierre L., 4,362,531, Cl. 23-230.00B.
Masuhara, Eiichi; Nakabayashi, Nobuo; Nagata, Katsuhisa; and Takeyama, Morio, to Mitsui Petrochemical Industries, Ltd. Composite filler and dental composition containing the same. 4,362,842, Cl. 524-854.000.
Mathai, John; and Morrison, Larry J., to Sherwin-Williams Company, The. Nitrocellulose-free primer-surfacer. 4,362,770, Cl. 427-409.000.
Mather, Anthony H.: *See*—
Walton, John M.; and Mather, Anthony H., 4,362,227, Cl. 192-70.280.
Matkan, Josef; and Wright, Robert J., to Better Methods, Inc. Electrostatic printing of markers for cutting fabric involves image transfer and two toners. 4,362,764, Cl. 427-14.100.
Matsui, Hiroshi; and Kakumu, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Electronic components of rotary type. 4,363,018, Cl. 338-172.000.
Matsui, Kazuma; Kurahashi, Takashi; Suzuki, Masahiko; and Kawaguchi, Kiyoshi, to Matsui, Kazuma. Device for preventing vibration of windshield wiper. 4,361,927, Cl. 15-250.420.
Matsumoto, Kouichi: *See*—
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,362,665, Cl. 260-245.20T.
Matsumoto, Yasuo; and Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Low-noise level internal combustion engine. 4,362,341, Cl. 308-26.000.
Matsuo, Yoshihiro; Itakura, Gen; Ikebe, Shoichi; and Wada, Tatsuya, to Matsushita Electric Industrial Co. Ltd. Grain boundary layer dielectric ceramic compositions. 4,362,637, Cl. 252-62.3BT.
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Sekido, Satoshi; and Ninomiya, Yoshito, 4,363,079, Cl. 361-433.000.
Matsushita, Hajime; and Shimura, Yoshimasa, to Hitachi, Ltd. Method and apparatus for recognizing smears. 4,362,386, Cl. 356-39.000.
Matsuura, Katsumi: *See*—
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Matsuura, Miyuki: *See*—
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Matsuzawa, Yoneo; Kawakami, Yoshio; and Kajimoto, Norifumi, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,363,059, Cl. 360-132.000.
Matthaus, Gunther; Ruffer, Joachim; and Diller, Andreas, to Siemens Aktiengesellschaft. High-voltage bushing with layers of preshrunk embossed insulating foils. 4,362,897, Cl. 174-31.00R.
Matthews, Gary B.: *See*—
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Maurice Goodall (Holdings) Limited: *See*—
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Mayles, B. Allen: *See*—
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Maytag Company, The: *See*—
Cotton, Curran D., 4,362,954, Cl. 307-142.000.
Emmert, Clayton F., 4,362,346, Cl. 312-311.000.
Mazzola, Ralph; and Leaf, Harry V., to Ark-Les Corporation. Terminal applying machine. 4,361,942. Cl. 29-33.00M.
McBride, Edward D.: *See*—
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McCambridge, Joseph. Method and apparatus for reducing destructive effects of tornados. 4,362,280, Cl. 244-1.0TD.
McCormack, William H.: *See*—
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McCormick, Keith M.: *See*—
Brush, Claire; McCormick, Keith M.; and Moor, B. J., 4,361,926, Cl. 15-236.00R.
McDaniel, William L. Pediatric table-chair. 4,361,916, Cl. 5-62.000.
McDonald, Walter; and Seitel, Norbert F. High speed cap orienting and feeding apparatus. 4,362,234, Cl. 198-400.000.
McElroy, Jerry W.: *See*—
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McFadden, Edward J., to BJ-Hughes Inc. Slip-type elevator locking mechanism. 4,361,940, Cl. 24-263.0DA.
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McIver, Chandler H., to Honeywell Information Systems Inc. Integrated circuit package. 4,363,076, Cl. 361-386.000.
McKay, Nicholas D., to Helmac Products Corporation. Lint remover. 4,361,923, Cl. 15-104.00A.

McKenney, James L.; and Stevenson, Robert H., to Vapor Corporation. Load controller having time integrated demand. 4,362,949, Cl. 307-31.000.
McKevitt, James F., III: *See*—
Pohlman, William B., III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., 4,363,091, Cl. 364-200.000.
McLey, David M., to Syntronics Music Corporation. Velocity sensing device using opto-electronic switches. 4,362,934, Cl. 250-229.000.
McManaman, Raymond M.: *See*—
Stefansson, Rafn; and McManaman, Raymond M., 4,362,298, Cl. 271-236.000.
McNeal, Donald J.: *See*—
Turner, Charles S.; McNeal, Donald J.; Cheshier, Donald G.; and Gray, James C., 4,362,951, Cl. 307-66.000.
McNeill, Avril B.; and Hargreaves, Neil G., to Lever Brothers Company. Process for producing a low-calorie spread. 4,362,758, Cl. 426-603.000.
Meacher, John S.; and Ruscitto, David E., to Mechanical Technology Incorporated. Hermetic turbine generator. 4,362,020, Cl. 60-657.000.
Mead Corporation, The: *See*—
Moore, Russell H.; and O'Meara, Patrick, 4,362,204, Cl. 164-16.000.
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MacLean, Donald L., 4,362,613, Cl. 208-108.000.
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Nakano, Fumio: *See*—
Umeda, Takao; Igawa, Tatsuo; Simazaki, Yuzuru; Miyashita, Takao; and Nakano, Fumio, 4,362,771, Cl. 428-1.000.

Nakano, Masao: *See*—
Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, 4,362,468, Cl. 416-186.00R.

Nakano, Yoshiaki: *See*—
Yamaguchi, Toshiyuki; Nobechi, Hiroyuki; Nakano, Yoshiaki; and Mizuno, Tiaki, 4,362,144, Cl. 123-609.000.

Nakashima, Yasutaka: *See*—
Ohshima, Iwao; and Nakashima, Yasutaka, 4,362,890, Cl. 560-222.000.

Nakatani, Koma, to Nihon Velbon Seiki Kogyo Kabushiki Kaisha. Shoulder-carriable cart. 4,362,307, Cl. 280-30.000.

Nakayama, Wataru: *See*—
Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, 4,363,012, Cl. 336-60.000.
Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, 4,363,013, Cl. 336-60.000.

Narita, Seiichi: *See*—
Kumita, Norio; Ori, Takaaki; and Narita, Seiichi, 4,362,913, Cl. 200-61.45R.

Narusawa, Toshiaki: *See*—
Yagishita, Teruo; Okada, Seiji; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,362,801, Cl. 430-83.000.

National Distillers & Chemical Corp.: *See*—
Cottingham, Auburn B., 4,362,250, Cl. 215-247.000.

National Semiconductor Corporation: *See*—
Sauer, Don R., 4,362,999, Cl. 329-103.000.

Natzel, Jerome W.: *See*—
Tacheny, John C.; Paulson, Gary F.; and Natzel, Jerome W., 4,362,328, Cl. 292-36.000.

NCR Canada Ltd - NCR Canada Ltee: *See*—
Subramaniam, Ambati, 4,363,036, Cl. 358-261.000.

NCR Corporation: *See*—
Cordes, Richard E.; and Sears, Ronald J., 4,362,408, Cl. 400-481.000.
Sears, Ronald J.; and Gross, Jack R., 4,362,911, Cl. 200-5.00A.
van Driest, Hans, 4,362,997, Cl. 329-50.000.

Necsoiu, Ion-Jan; Bratu, Polidor P.; Ghinea, Aurelian; and Axinte, Gavril, to Institutul de Cercetari in Constructii si Economia Constructiilor. Step adjustable monoaxial vibrator. 4,362,066, Cl. 74-87.000.

Neese, James A., to Sparton Corporation. Method of adjusting air gap of an electric horn. 4,361,952, Cl. 29-594.000.

Neil, Clyde C.: *See*—
Hammer, Jacob M.; Kaiser, Charlie J.; and Neil, Clyde C., 4,362,367, Cl. 350-433.000.

Nelson, Donald L.: *See*—
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,362,848, Cl. 525-193.000.

Nelson, Eugene D.; and Rasovich, Ivan. Foam splitter. 4,362,539, Cl. 55-178.000.

Nelson, John P.: *See*—
Cockerham, C. C., Jr.; and Nelson, John P., 4,362,001, Cl. 53-441.000.

Nethery, Stanton K., to Fisher Controls Company, Inc. Combustion control system and method. 4,362,499, Cl. 431-12.000.

Neuman, Clayton L. Two-cycle engine. 4,362,132, Cl. 123-73.00D.

Neuman, Harold L.: *See*—
Lombardi, Edward J., Jr.; Neuman, Harold L.; Magro, Alfred E.; and Rishton, Michael L., 4,362,150, Cl. 128-1.00D.

Neuray, Dieter: *See*—
Korber, Helmut; Tacke, Peter; Fahnler, Friedrich; Neuray, Dieter; and Heydenreich, Frieder, 4,362,846, Cl. 525-66.000.

Neville, David J.: *See*—
Heath, Alastair E. F.; Neville, David J.; Cockburn, Barry; and Bussey, Stephen, 4,362,052, Cl. 73-119.00A.

Neville, Melvin L.: *See*—
Clishem, Thomas A.; Neville, Melvin L.; and Pokallus, Leonard W., 4,362,686, Cl. 264-317.000.

New World Computer Company, Inc.: *See*—
Herman, Robert W., 4,363,045, Cl. 360-104.000.

New York University: *See*—
Abele, Manlio, 4,362,058, Cl. 73-599.000.

Newport, Christopher: *See*—
Kaul, Pradeep; Wendling, Daniel; Ford, Harold; Muzamder, Deepak; and Newport, Christopher, 4,363,094, Cl. 364-200.000.

NFE International Ltd.: *See*—
DeMarco, Thomas M., 4,361,985, Cl. 49-280.000.

Nguyen, Chinh T.: *See*—
Srinivasan, Krishnaswamy; and Nguyen, Chinh T., 4,363,099, Cl. 364-484.000.

Nicaise, Remy: *See*—
Hembersin, Roland; and Nicaise, Remy, 4,362,602, Cl. 203-59.000.

Nicholson, Brian: *See*—
Figg, Anthony V. J.; and Nicholson, Brian, 4,362,103, Cl. 101-348.000.

Nicolai, Donald R.; and Hanson, Oliver D. Diagnostic measuring instrument. 4,362,167, Cl. 128-778.000.

Nielsen, Floyd P.; and Wallender, Thomas A., to Nielsen Industries, Inc. Milking barn system and apparatus. 4,362,127, Cl. 119-14.030.

Nielsen Industries, Inc.: *See*—
Nielsen, Floyd P.; and Wallender, Thomas A., 4,362,127, Cl. 119-14.030.

Nigol, Olaf; and Houston, Herbert J., to Slater Steel Industries Limited. Air cylinder-type vibration absorber for suspended cables and suspended cable in combination therewith. 4,362,900, Cl. 174-42.000.

Nigol, Olaf; and Houston, Herbert J., to Slater Steel Industries Limited. Bellows-type vibration absorber for suspended cables and suspended cable in combination therewith. 4,362,901, Cl. 174-42.000.

Nihon Kogyo Kabushiki Kaisha: *See*—
Tsuji, Masahiro, 4,362,579, Cl. 148-11.50C.

Nihon Velbon Seiki Kogyo Kabushiki Kaisha: *See*—
Nakatani, Koma, 4,362,307, Cl. 280-30.000.

Nijhuis, Johan W., to Machinefabriek G.J. Nijhuis B.V. Apparatus for electrically stunning slaughter cattle. 4,361,932, Cl. 17-1.00E.

Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Polyimides from bicyclo[4.2.0]octane-7,8-dimethyl-3,4,7,8-tetracarboxylic acid dianhydride (I) and bicyclo [4.2.0]octane-2,5 diphenyl-7,8-dimethyl-3,4,7,8-tetracarboxylic dianhydride. 4,362,859, Cl. 528-188.000.

Ninomiya, Yoshito: *See*—
Sekido, Satoshi; and Ninomiya, Yoshito, 4,363,079, Cl. 361-433.000.

Nippon Kogaku K.K.: *See*—
Kazami, Kazuyuki; and Hagyuda, Nobuyoshi, 4,362,369, Cl. 354-106.000.
Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, 4,362,373, Cl. 354-234.000.
Ogasawara, Akira; and Motoori, Ryuzo, 4,362,956, Cl. 307-355.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; and Kobatake, Tatsuo, 4,362,448, Cl. 409-300.000.
Kajikawa, Shuji; Kanai, Kazuo; Ito, Haruo; Hirata, Yoshihisa; Konishi, Jiro; Takasaki, Yasuto; Ohkoshi, Kenji; and Yanagida, Yoshinobu, 4,362,504, Cl. 432-83.000.
Nippon Oil and Fats Co. Ltd.: *See*—
Hasegawa, Shiro; and Gima, Sanehiro, 4,362,450, Cl. 411-258.000.
Nippon Soken, Inc.: *See*—
Igashira, Toshihiko; Yoshida, Hitoshi; Nomura, Ken; and Abe, Seikou, 4,362,142, Cl. 123-549.000.
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,362,495, Cl. 425-376.00A.
Nippondenso Co., Ltd.: *See*—
Akita, Yoshio; Maruyama, Toshinori; and Muto, Katsuya, 4,362,982, Cl. 320-64.000.
Kumita, Norio; Ori, Takaaki; and Narita, Seiichi, 4,362,913, Cl. 200-61.45R.
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,363,019, Cl. 338-214.000.
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Minura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,362,983, Cl. 322-28.000.
Sano, Hiromi; Suzuki, Masatoshi; Hamaya, Masahiro; and Ouki, Masami, 4,362,609, Cl. 204-195.00S.
Yamaguchi, Toshiyuki; Nobechi, Hiroyuki; Nakano, Yoshiaki; and Mizuno, Tiaki, 4,362,144, Cl. 123-609.000.
Nipponseimitsu Kogyo Kabushiki Kaisha: *See*—
Endo, Kazuhiro; Soejima, Toshiyuki; and Fujihara, Masahiro, 4,362,409, Cl. 400-625.000.
Nishi, Katsuhide: *See*—
Maeda, Hiroshi; and Nishi, Katsuhide, 4,362,718, Cl. 424-177.000.
Nishigaki, Masahiko: *See*—
Tonoki, Satoshi; Hirobe, Kazushi; Osawa, Tadashi; and Nishigaki, Masahiko, 4,362,839, Cl. 524-513.000.
Nishikawa, Masahiro: *See*—
Abe, Atsushi; Ogawa, Hisahito; Nishikawa, Masahiro; Sekido, Satoshi; and Hayakawa, Shigeru, 4,362,765, Cl. 427-38.000.
Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, to Kawasaki Jukogyo Kabushiki Kaisha. Single curvature fan wheel of a diagonal flow fan. 4,362,468, Cl. 416-186.00R.
Nishimatsu, Shigeru: *See*—
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,361,949, Cl. 29-571.000.
Nishimoto, Tatsuya: *See*—
Torigai, Eiichi; Wakabayashi, Noboru; Kawami, Yoji; Kamijo, Eiji; Nishimoto, Tatsuya; and Tani, Katsuhito, 4,362,647, Cl. 252-425.300.
Nishimura, Keizo; and Kanazawa, Yasunori, to Hitachi, Ltd. Automatic operation control apparatus for a PCM recording and reproducing system. 4,363,039, Cl. 360-19.100.
Nishiyama, Toyoo: *See*—
Kimura, Kenji; Saitou, Sinichi; Nishiyama, Toyoo; Kato, Toshikazu; Shimoda, Misao; Watanabe, Seizo; Satoh, Ken; and Shibata, Tutomu, 4,363,042, Cl. 360-71.000.
Nissan Gosei Kogyo Co., Ltd.: *See*—
Watanabe, Yoshiko, 4,362,710, Cl. 424-14.000.
Nissan Motor Company, Limited: *See*—
Abo, Toshimi; and Hosaka, Akio, 4,363,092, Cl. 364-200.000.
Matsumoto, Yasuo; and Hayashi, Yoshimasa, 4,362,341, Cl. 308-26.000.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,362,268, Cl. 236-13.000.
Nissin Jabara Industries Co., Ltd.: *See*—
Fukumoto, Masafumi, 4,362,143, Cl. 123-556.000.
Nitto Chemical Industry Co. Ltd.: *See*—
Ohshima, Iwao; and Nakashima, Yasutaka, 4,362,890, Cl. 560-222.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Kojima, Makoto; and Yane, Hideki, 4,362,863, Cl. 528-353.000.
Mune, Isao; Suzuki, Kihachi; and Okuno, Toshimitu, 4,362,833, Cl. 524-265.000.
Nobechi, Hiroyuki: *See*—
Yamaguchi, Toshiyuki; Nobechi, Hiroyuki; Nakano, Yoshiaki; and Mizuno, Tiaki, 4,362,144, Cl. 123-609.000.
Nobel, Leendert: *See*—
Farfaletti-Casali, Flaviano; Buzzi, Umberto; Nobel, Leendert; and Reiter, Friedrich, 4,362,207, Cl. 165-10.000.
Noll, Klaus: *See*—
Keck, Johannes; Kruger, Gerd; Pieper, Helmut; Noll, Klaus; Engelhardt, Gunther; Promberger, Norbert; and Zimmermann, Rainer, 4,362,738, Cl. 424-274.000.
Nomura, Isao: *See*—
Shimizu, Seazo; Nomura, Isao; Usui, Motohachi; and Harada, Mashahiro, 4,362,858, Cl. 528-179.000.
Nomura, Ken: *See*—
Igashira, Toshihiko; Yoshida, Hitoshi; Nomura, Ken; and Abe, Seikou, 4,362,142, Cl. 123-549.000.
Nomura, Noboru: *See*—
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,362,767, Cl. 427-130.000.
Nomura, Norimasa: *See*—
Yoshida, Atsushi; and Nomura, Norimasa, 4,362,377, Cl. 354-320.000.
Norco, Inc.: *See*—
Metz, Joseph R.; and Lutterman, Richard C., 4,362,415, Cl. 403-109.000.
Norcros Investments Limited: *See*—
Figg, Anthony V. J.; and Nicholson, Brian, 4,362,103, Cl. 101-348.000.
Nordson Corporation: *See*—
Grevich, John J., 4,362,593, Cl. 156-498.000.
Noritake, Yutaka: *See*—
Hayashi, Tadayoshi; Kajitani, Ikuo; Ueno, Katsusuke; and Noritake, Yutaka, 4,362,700, Cl. 422-179.000.
Norris, William P.: *See*—
Henry, Ronald A.; and Norris, William P., 4,362,583, Cl. 149-92.000.
North American Philips Consumer Electronics Corp.: *See*—
Puhak, Peter G., 4,362,963, Cl. 313-407.000.
Northern Telecom, Inc.: *See*—
Morris, Darryl C., 4,362,995, Cl. 328-145.000.
Northern Telecom Limited: *See*—
Agnew, David G.; and Cohn-Sfetcu, Sorin, 4,363,100, Cl. 364-484.000.
Black, David H. A.; Joyce, Robert H.; Daaboul, Fouad; and Le Van, Tiu, 4,363,122, Cl. 370-81.000.
Grover, Wayne D., 4,363,123, Cl. 371-5.000.
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Magnetic thin film and method of making it. 4,362,767, Cl. 427-130.000.
Nowlin, Oscar D.: *See*—
Dietz, Richard E.; and Nowlin, Oscar D., 4,362,648, Cl. 252-429.00B.
Nozaki, Ken: *See*—
Kaneko, Hiroko; and Nozaki, Ken, 4,362,791, Cl. 429-101.000.
Nussmeier, Thomas A., to Hughes Aircraft Company. Imaging system having multiple image copying and hierarchical busing. 4,363,104, Cl. 364-515.000.
Nutrisearch Company: *See*—
Chang, Pei K.; and Scibelli, Gabriele E., 4,362,761, Cl. 426-657.000.
Nutzel, Karl: *See*—
Dhein, Rolf; Hentschel, Karl-Heinz; Nutzel, Karl; Morche, Klaus; and Schule, Wolfgang, 4,362,635, Cl. 252-56.00S.
Nyberg, Jens R.: *See*—
Rastas, Jussi K.; Nyberg, Jens R.; Karpale, Kauko J.; and Bjorkqvist, Lars-Goran, 4,362,702, Cl. 423-41.000.
Nystrom, Olle: *See*—
Eriksson, Torsten L.; Andersson, John O.; and Nystrom, Olle, 4,362,500, Cl. 431-352.000.
Obara, Minoru: *See*—
Yamamoto, Hirotaka; Obara, Minoru; and Fujiwara, Shinobu, 4,363,088, Cl. 363-59.000.
Obermuller, Hermann, to Gebr. Niessing. Multipartite jewelry item useful as a finger ring. 4,362,031, Cl. 63-15.000.
Occidental Chemical Corporation: *See*—
Peterson, John A., 4,362,641, Cl. 252-135.000.
Occidental Research Corporation: *See*—
Morey, Booker W., 4,362,276, Cl. 241-24.000.
Salisbury, Winfield W., 4,363,137, Cl. 455-40.000.
OCE-Nederland B.V.: *See*—
Mulder, Bernardus A.; and Witteveen, Bontko, 4,362,363, Cl. 350-299.000.
Tiek, Fredericus J. A. M.; and Stienstra, Jan B., 4,362,379, Cl. 355-3.0SH.
Oerlikon-Buhrle U.S.A. Inc.: *See*—
Winkler, Otto C., 4,362,024, Cl. 62-6.000.
Ogasawara, Akira; and Motoori, Ryuzo, to Nippon Kogaku K.K. Absolute value circuit. 4,362,956, Cl. 307-355.000.
Ogawa, Hisahito: *See*—
Abe, Atsushi; Ogawa, Hisahito; Nishikawa, Masahiro; Sekido, Satoshi; and Hayakawa, Shigeru, 4,362,765, Cl. 427-38.000.
Ogawa, Junkichi; Yamada, Minoru; and Hamaoka, Tsutomu, to Fuji Photo Film Co., Ltd. Process for forming photographic images and photographic light-sensitive material for use therein. 4,362,795, Cl. 430-9.000.
Ogawa, Rikuo: *See*—
Yamaguchi, Yoshihiro; Takatsuka, Kouro; Murakami, Shohei; Ogawa, Rikuo; Yamada, Yoshiro; Yokoyama, Tadamasa; and Akita, Shoji, 4,362,040, Cl. 72-201.000.
Ogura, Mitsuhiro; and Saito, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Webbing driving guide. 4,362,320, Cl. 280-802.000.
O'Hanlon, Peter J.: *See*—
Rogers, Norman H.; O'Hanlon, Peter J.; and Walker, Graham, 4,362,743, Cl. 424-283.000.
O'Hare, Louis R. Hydrogen pyrolysis fuel injection. 4,362,137, Cl. 123-295.000.
Ohashi, Toshio: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,362,268, Cl. 236-13.000.
Ohhashi, Masahide; and Yanagi, Hisao, to Tokyo Shibaura Denki Kabushiki Kaisha. Binary multiplication cell circuit. 4,363,107, Cl. 364-758.000.
Ohkoshi, Kenji: *See*—
Kajikawa, Shuji; Kanai, Kazuo; Ito, Haruo; Hirata, Yoshihisa; Konishi, Jiro; Takasaki, Yasuto; Ohkoshi, Kenji; and Yanagida, Yoshinobu, 4,362,504, Cl. 432-83.000.
Ohlinger, Manfred; Reichert, Hans; Vaeth, Guenter; Faulhaber, Friedrich R.; Autzen, Horst; Rudolf, Peter; and Werther, Joachim, to

BASF Aktiengesellschaft. Preparation of acicular gamma-iron(III) oxide of high coercive force. 4,362,708, Cl. 423-634.000.
Ohnishi, Tatsuo; Uemura, Takeshi; and Nakajima, Teruo, to Akzona Incorporated. Method of blanking. 4,362,078, Cl. 83-862.000.
Ohnmacht, Helmut; and Hofer, Edwin, to Fritz Eichenauer, Firma. Method of and apparatus for the production of a toaster heating element. 4,361,954, Cl. 29-611.000.
Ohno, Isamu: *See*—
Yokogawa, Shozo; Ohno, Isamu; and Kurita, Yoshio, 4,362,061, Cl. 73-861.240.
Ohno, Tetatsu. Polishing apparatus. 4,361,989, Cl. 51-164.100.
Ohshima, Iwao; and Nakashima, Yasutaka, to Nitto Chemical Industry Co. Ltd.; and Mitsubishi Rayon Co., Ltd. Process for the preparation of unsaturated quaternary ammonium salts. 4,362,890, Cl. 560-222.000.
Ohtsubo, Yoshiaki: *See*—
Kazami, Kazuyuki; and Ohtsubo, Yoshiaki, 4,362,373, Cl. 354-234.000.
Ohtsuki, Tadashi; Kazami, Shinichi; Anjyu, Shinji; and Tanaka, Masato, to Sony Corporation. Method and apparatus for editing digital signals. 4,363,049, Cl. 360-13.000.
Ohzeki, Toshio; Akutsu, Mitsuo; and Semba, Takanori, to Adeka Argus Chemical Co., Ltd. Synergistic light and heat stabilizer compositions for synthetic resins and resin compositions containing the same. 4,362,831, Cl. 524-102.000.
Oka, Shozi: *See*—
Iguchi, Shigeru; and Oka, Shozi, 4,362,811, Cl. 430-455.000.
Okada, Seiji: *See*—
Yagishita, Teruo; Okada, Seiji; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,362,801, Cl. 430-83.000.
Okamura Oil Mill Limited: *See*—
Higashiguthi, Teruaki; and Ishioka, Mithio, 4,362,871, Cl. 542-427.000.
Okayama, Tsutomu; and Kugaya, Takashi, to Hitachi, Ltd. Displacement transducer. 4,362,060, Cl. 73-708.000.
Okazaki, Masaki: *See*—
Mihara, Yuji; Ikeda, Tadashi; Takei, Haruo; Okazaki, Masaki; and Aotsuka, Yasuo, 4,362,813, Cl. 430-550.000.
Okuno, Toshimitu: *See*—
Mune, Isao; Suzuki, Kihachi; and Okuno, Toshimitu, 4,362,833, Cl. 524-265.000.
Okuyama, Hirofumi: *See*—
Yagishita, Teruo; Okada, Seiji; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,362,801, Cl. 430-83.000.
Olin Corporation: *See*—
Winter, Joseph; Brenneman, William; and Fister, Julius C., 4,362,262, Cl. 228-117.000.
Oliver, Earl P. Shower curtain holder. 4,361,914, Cl. 4-605.000.
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; Dobhan, Herbert; Horling, Peter; and Klupfel, Norbert, to SKF Kugellagerfabriken GmbH. Method and apparatus for casting or injection-molding of cages of cylindrical rolling elements. 4,362,687, Cl. 264-318.000.
Olszewski, Anthony R.; Tick, Paul A.; and Sanford, Leon M., deceased (by Sanford, Michele R., administratrix), to Corning Glass Works. Moldable fluoroaluminophosphate glasses. 4,362,819, Cl. 501-44.000.
Olsztynski, Adalbert; and Hardegen, Bernd, to Buehler-Mag GmbH. Material conveying system with a pneumatically or mechanically operated substantially upright conveyor provided with a device for loosening and transporting the material to the upright conveyor. 4,362,237, Cl. 198-509.000.
Olympus Optical Co., Ltd.: *See*—
Hanaoka, Naohiro, 4,363,052, Cl. 360-59.000.
Hanaoka, Naohiro, 4,363,058, Cl. 360-122.000.
Kimura, Kenji; Saitou, Sinichi; Nishiyama, Toyoo; Kato, Toshikazu; Shimoda, Misao; Watanabe, Seizo; Satoh, Ken; and Shibata, Tutomu, 4,363,042, Cl. 360-71.000.
Omata, Katumi, 4,361,948, Cl. 29-517.000.
Shimizu, Akira, 4,362,797, Cl. 430-55.000.
Takahashi, Naoyuki, 4,362,355, Cl. 350-84.000.
Omata, Katumi, to Olympus Optical Company Ltd. Method of manufacturing cytodiagnostic brush assembly. 4,361,948, Cl. 29-517.000.
O'Meara, Patrick: *See*—
Moore, Russell H.; and O'Meara, Patrick, 4,362,204, Cl. 164-16.000.
Ono, Syoji; Fukumoto, Yuji; and Yoshida, Tsunemasa, to Teijin Limited; and Chemo-Sero-Therapeutic Research Institute, The. Immunoglobulin composition having a high monomer content, and process for production thereof. 4,362,661, Cl. 260-112.00B.
Onotera, Larry Y.: *See*—
Froese, Abram; Onotera, Larry Y.; Ahmed, Muhammad J.; and Liebelt, Alvin, 4,363,131, Cl. 455-42.000.
Onoye, Hideo: *See*—
Kitamura, Masatsugu; Onoye, Hideo; and Shimizu, Hiroki, 4,363,043, Cl. 360-72.100.
Opalka, Chester J., Jr.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,362,734, Cl. 424-263.000.
Opti Patent-, Forschungs-und Fabrikations AG: *See*—
Frohlich, Alfons; and Griessbaum, Karl, 4,362,191, Cl. 139-384.00B.
Ori, Takaaki: *See*—
Kumita, Norio; Ori, Takaaki; and Narita, Seiichi, 4,362,913, Cl. 200-61.45R.
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., to Scientific Pharmaceuticals, Inc. Adducts of 1,4-bis[(3-methacroyl-2-hydroxypropoxy)methyl] cyclohexane and derivatives thereof with isocyanates. 4,362,888, Cl. 560-162.000.
Orsini, Jean-Vitus, to Etablissements Carpano & Pons. Device for controlling a bidirectional DC motor. 4,362,975, Cl. 318-293.000.
Ortloff, John E.; and Wolfram, W. Robert, Jr., to Exxon Production Research Co. Limited angle piggable swivel. 4,362,325, Cl. 285-190.000.
Osaka, Hiroshi; Honma, Akira; and Kizaki, Yoshio, to Clarion Co., Ltd. Phase iocked loop for use with discontinuous input signals. 4,363,003, Cl. 331-1.00A.
Osaka, Norihisa: *See*—
Kamata, Kazumasa; Kishida, Kazuo; Ueda, Kazuo; and Osaka, Norihisa, 4,362,845, Cl. 525-57.000.
Osawa, Tadashi: *See*—
Tonoki, Satoshi; Hirobe, Kazushi; Osawa, Tadashi; and Nishigaki, Masahiko, 4,362,839, Cl. 524-513.000.
Oshima, Yoshimasa: *See*—
Koizumi, Mituyoshi; Akiyama, Nobuyuki; and Oshima, Yoshimasa, 4,362,389, Cl. 356-401.000.
Osipow, Lloyd: *See*—
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Otthofer, Jacob A., Jr., to Armstrong World Industries, Inc. Print screen stencil and its production. 4,362,808, Cl. 430-308.000.
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Mieth, Hans O., 4,362,327, Cl. 285-332.300.
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Johnson, Wallace R., 4,362,512, Cl. 440-6.000.
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Campbell, Cecil W.; and Owen, Robert B., 4,362,361, Cl. 350-171.000.
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Froberg, Magnus L., 4,362,543, Cl. 65-27.000.
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Shannon, Richard F., 4,362,675, Cl. 264-28.000.
Thompson, Thomas K., 4,362,541, Cl. 65-2.000.
Uffner, William E.; and White, Robert N., 4,362,586, Cl. 156-71.000.
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Uhlig, Albert R., 4,362,496, Cl. 425-379.00R.
Oy Lohja AB: *See*—
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Lang, Linton W.; and Stetson, Robert L., 4,362,691, Cl. 376-267.000.
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Elward, John R., 4,362,240, Cl. 206-188.000.
Pacific Rim Equipment Corp.: *See*—
Hill, Louis F., 4,362,195, Cl. 144-242.00R.
Packaging Corporation of America: *See*—
Duncan, Jack E., 4,362,264, Cl. 229-27.000.
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Paddock, Gary V., to Research Corporation. Recombinant cDNA construction method and hybrid nucleotides useful in cloning. 4,362,867, Cl. 536-27.000.
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Palange, Walter. Apparatus for use in producing knit fabrics. 4,362,032, Cl. 66-4.000.
Paloian, Michael D.; and George, Peter D., to Ransom F. Shoup & Company, Inc. Voting machine. 4,362,925, Cl. 235-51.000.
Panagin, Romano, to Centro Ricerche Fiat S.p.A. Railway vehicle trucks. 4,362,109, Cl. 105-182.00R.
Panavision, Incorporated: *See*—
Gottschalk, Robert E., 4,362,366, Cl. 350-420.000.
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Faucher, Joseph E.; Wright, Richard R.; Pane, Francis C., Jr.; and Kwoka, David, 4,362,022, Cl. 60-742.000.
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Papadopulos, Stephen C. Pollution control device for automobile exhaust. 4,362,016, Cl. 60-297.000.
Parise & Sons, Inc.: *See*—
Schulz, Rainer R., 4,361,928, Cl. 15-326.000.
Parker, Alan; and Dickinson, Peter J. Method and apparatus for forming composite yarn. 4,362,008, Cl. 57-5.000.
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Sykes, Richard B.; Wells, Jerry S.; and Parker, William L., 4,362,814, Cl. 435-119.000.
Parkison, Richard G.; Fischer, Armin O.; and Kaussner, John C., to American Standard Inc. Sanitary fitting. 4,362,186, Cl. 137-625.170.
Partridge, Jerry A.; and Bosuego, Gail P., to United States of America, Energy. Mercuric iodate precipitation from radioiodine-containing off-gas scrubber solution. 4,362,660, Cl. 252-631.000.
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Patel, Parsotam T.: *See*—
Kalter, Howard L.; Kotecha, Harish N.; and Patel, Parsotam T., 4,363,110, Cl. 365-149.000.
Patel, Vishnubhai V.: *See*—
Engler, Edward M.; Patel, Vishnubhai V.; and Schumaker, Robert R., 4,362,662, Cl. 260-239.00R.
Patten, Kenneth S. Internal combustion engine or pumping device. 4,362,477, Cl. 417-364.000.
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Burnup, Michael; Hayes, Gerard F.; and Paul, Norman C., 4,362,868, Cl. 536-66.000.
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Tacheny, John C.; Paulson, Gary F.; and Natzel, Jerome W., 4,362,328, Cl. 292-36.000.
Pavlik, Norman M.; and Sefko, John, to Westinghouse Electric Corp. Low temperature cure interlaminar coating. 4,362,782, Cl. 428-336.000.
Paxton, Jerre H. Bag closure. 4,361,935, Cl. 24-30.50R.
Peachee, C. Theodore, to Emerson Electric Co. Method of securing end shields to the stator assembly of a dynamoelectric machine. 4,361,953, Cl. 29-596.000.
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Harris, Hubert, 4,362,759, Cl. 426-632.000.
Peddinghaus, Rolf. Device for disentangling bars. 4,362,460, Cl. 414-745.000.
Pegram, Philip H., to Dunlop Limited. Pressure indicator for pneumatic tires. 4,362,121, Cl. 116-34.00R.
Pekar, Frank M.; and Cooper, Frank W., Jr., to Westinghouse Electric Corp. Steam generator tubesheet face machining apparatus. 4,362,447, Cl. 409-200.000.
Pell, Philip T. Table game employing two sets of cards. 4,362,303, Cl. 273-274.000.
Pellerin Milnor Corporation: *See*—
Garcia, Daniel P., 4,363,090, Cl. 364-139.000.
Pendlebury, David; Rowan, Hugh H.; and Buyalos, Edward J., to Allied Corporation. Devolatilizing molten polymer with a rotary disk processor. 4,362,852, Cl. 525-437.000.
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Perchinunno, Michele: *See*—
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Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E., 4,362,560, Cl. 75-63.000.
Perez, Jesus W.; and Wang, Samuel S., to American Cyanamid Company. Method of introducing addition agents into a metallurgical operation. 4,362,559, Cl. 75-53.000.
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Perkin-Elmer Corporation, The: *See*—
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Perraudin, Claude; Amarge, Edmond; Guiho, Jean P.; Horiot, Jean C.; Taniel, Gerard; Viel, Georges; and Brethon, Jean P., to C.G.R.-MeV, Commissariat a l'Energie Atomique. Irradiation apparatus using radioactive sources. 4,362,947, Cl. 378-150.000.
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Perrut, Michel; Pointet, Marcel; and de Santerre, Henri T., to Societe Nationale Elf Aquitaine. Liquid sample injection system for gas chromatography. 4,362,046, Cl. 73-23.100.
Perry, John C. Flexible enclosed shaft. 4,362,520, Cl. 464-149.000.
Perry, Thomas J.: *See*—
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Pervel Industries, Inc.: *See*—
Rzepecki, Ray M.; and Weiss, Victor H., 4,363,071, Cl. 361-220.000.
Perzley, William: *See*—
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Peterson, Avo, to V. Lowener Maschinen GmbH. Belt-tension gauge. 4,362,062, Cl. 73-862.470.
Peterson, John A., to Occidental Chemical Corporation. Composition of an STPP product for dishwasher detergent formulations and method of preparation. 4,362,641, Cl. 252-135.000.
Petersson, Nils A. I., to Brio Toy AB. Connection element for making assemblies of toy units. 4,361,979, Cl. 46-26.000.
Petrarch Systems, Inc.: *See*—
Arkles, Barry C., 4,362,884, Cl. 556-446.000.
Petree, Marcella: *See*—
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Logan, Joseph S.; Petvai, Steve I.; and Rosu, Cornel, 4,362,611, Cl. 204-298.000.
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Philip Morris, Incorporated: *See*—
Keritsis, Gus D.; Bokelman, Gordon H.; and Gooden, Dewitt T., III, 4,362,170, Cl. 131-309.000.
Phillips, Martin A., Jr., to Goodyear Tire & Rubber Company, The. Composition of pelletized and powdery LLDPE and liquid polyolefin for the production of film. 4,362,835, Cl. 524-317.000.
Phillips Petroleum Company: *See*—
Dietz, Richard E.; and Nowlin, Oscar D., 4,362,648, Cl. 252-429.00B.
Photon Power, Inc.: *See*—
Singh, Vijay P., 4,362,896, Cl. 136-258.000.
Phung, Nhu H.: *See*—
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Pierburg GmbH & Co. KG: *See*—
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Piezo Electric Products, Inc.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,362,407, Cl. 400-124.000.
Piliavin, Michael A.; and Toker, James R., to Texas Instruments Incorporated. Switch for sensing proximity of an operator. 4,363,029, Cl. 340-501.000.
Pineger, Reginald N.; and Clark, Malcolm C., to Ciba-Geigy Corporation. Color former composition. 4,362,565, Cl. 106-21.000.
Pioneer Electronic Corporation: *See*—
Ishida, Kohji, 4,362,906, Cl. 179-1.0GD.
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,362,772, Cl. 428-36.000.
Pittasch, Willi: *See*—
Schnelle, Manfred; von Reden, Manfred; Pittasch, Willi; and Busse, Peter, 4,361,931, Cl. 16-252.000.
Plamper, Gerhard R.; Kaesgen, Hartmut; and Rush, Robert W., Jr., to MTD Products Inc. Control lever mounting. 4,362,228, Cl. 192-0.094.
Plassmeier, Horst, to Durkoppwerke GmbH. Microcomputer-controlled circuit tester. 4,363,105, Cl. 364-580.000.
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Plessey Overseas Limited: *See*—
Duncan, William C. W., 4,362,419, Cl. 403-343.000.
Pletka, Hans-Dieter: *See*—
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Plummer, Ernest L., to FMC Corporation. Trans-3-substituted-1-indanol insecticidal ester derivatives. 4,362,744, Cl. 424-305.000.
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Pohlman, William B., III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., to Intel Corporation. Extended address, single and multiple bit microprocessor. 4,363,091, Cl. 364-200.000.
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Clishem, Thomas A.; Neville, Melvin L.; and Pokallus, Leonard W., 4,362,686, Cl. 264-317.000.
Polacsek, David D. Combination automobile sun visor and radio and speaker assembly. 4,362,907, Cl. 179-1.0VE.
Polaroid Corporation: *See*—
Choinski, Edward J., 4,362,122, Cl. 118-600.000.
Kiesel, Kenneth C., 4,362,372, Cl. 354-195.000.
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Polasek, Randolph J. Beverage dispenser. 4,362,256, Cl. 222-383.000.
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Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,362,553, Cl. 75-0.5BA.
Pollard, Brian W.; Perzley, William; and Blanchard, Stanley J., to Unimation, Inc. Control system for manipulator apparatus. 4,362,978, Cl. 318-568.000.
Pollard, Christopher A.: *See*—
Riggle, Charles M.; Pollard, Christopher A.; and Read, John D., 4,363,056, Cl. 360-98.000.
Polster, Louis S. Cooking time control system. 4,362,094, Cl. 99-342.000.
Poore, Albert C. G., to Sterling Drug Inc. Process and platform apparatus for producing packaging element. 4,362,000, Cl. 53-411.000.
Portoghese, Philip S., to University of Minnesota, Regents of the. Selective opioid receptor alkylating agents. 4,362,870, Cl. 542-403.000.
Povey, Robert: *See*—
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PPG Industries, Inc.: *See*—
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PQ Corporation: *See*—
Strianse, Sabbat J.; Sherry, Howard S.; and Hertzenberg, Elliot P., 4,362,715, Cl. 424-78.000.
Prapas, Aristotle G., to Mobil Oil Corporation. Poly(p-methylstyrene) with broad molecular weight distribution and process for preparation. 4,362,854, Cl. 526-228.000.
Predali, Jean-Jacques: *See*—
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Presby, Herman M., to Bell Telephone Laboratories, Incorporated. Method of measuring the refractive index profile and the core diameter of optical fibers and preforms. 4,362,943, Cl. 250-459.100.
Presson, Robert D.; Wu, Hsin-Chih; and Sockell, Edward J., to Standard Oil Company, The. Continuous acetonitrile recovery process. 4,362,603, Cl. 203-75.000.
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Hill, Frank F.; Schindler, Joachim; Schmid, Rolf; Preuss, Wolfgang; and Struve, Alfred, 4,362,815, Cl. 435-172.000.
Price, Kenneth T.: *See*—
Ritcey, Gordon M.; Price, Kenneth T.; and Lucas, Bernard H., 4,362,607, Cl. 204-108.000.
Priebe, Durward H., to Hewlett-Packard Company. Method and means for an accurate wideband peak detector. 4,362,996, Cl. 328-151.000.
Pringle, Ronald E.; and Morris, Arthur J., to Camco, Incorporated. Tubing retrievable variable setting differential pressure actuated well safety valve. 4,362,214, Cl. 166-322.000.
Pro-Tect, Inc.: *See*—
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PTX-Pentronix, Inc.: *See*—
DeSantis, Raymond P., 4,362,483, Cl. 425-78.000.
Puccio, Guy S.; and Kerschner, James J., to Acme Highway Products Corporation. Cover cap for the anchor bolt receiving channel of an expansion joint system retainer. 4,362,429, Cl. 404-68.000.
Puck, Alfred; and Voirol, Peter, to Ciba-Geigy Corporation. Power transmission shaft. 4,362,521, Cl. 464-181.000.
Puhak, Peter G., to North American Philips Consumer Electronics Corp. Strengthened CRT aperture mask frame. 4,362,963, Cl. 313-407.000.
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Abrjutin, Vladimir N.; Ezhkov, Vyacheslav P.; Ivanova, Raisa V.; Kalashnik, Oleg N.; Kirichenko, Vyacheslav A.; Peredereev, Alexandr V.; Pukhov, Jury G.; Belsky, Arkady A.; Kozhemyakin, Vladimir V.; and Masjuk, Galina E., 4,362,560, Cl. 75-63.000.
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Puryear, John W.; and Callan, Arthur D., to Brunswick Corporation. Method of making fishing line control device. 4,362,763, Cl. 427-14.100.
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Pyrodex Corporation: *See*—
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Quedens, Phillipp J., to SmithKline Instruments, Inc. Multiformat film cassette transport. 4,362,381, Cl. 355-54.000.
Quell, Peter: *See*—
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Rader, Kurt; and Stoss, Peter, to Heinrich Mack Nachf. Chem-Pharm. Fabrik. Vincamine saccharinate and a pharmaceutical composition containing it dissolved therein. 4,362,730, Cl. 424-256.000.
Radomski, Thomas A., to General Motors Corporation. Transistor chopper protection circuit. 4,363,067, Cl. 361-91.000.
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Rastogi, Laxmi K.; Allen, Arthur D.; and Tsing, John Y. H., to Measurex Corporation. Control system for a boiler and method therefor. 4,362,269, Cl. 236-14.000.
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Ravenel, Bruce W., III: *See*—
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Raytheon Company: *See*—
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Gevondyan, Ara, 4,362,574, Cl. 148-1.500.
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Razdan, Raj K.: *See*—
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RCA Corporation: *See*—
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Modla, Andrew A., 4,363,050, Cl. 360-32.000.
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Reinowitz, Jack. Wireless alarm system. 4,363,031, Cl. 340-539.000.

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Remo, Inc.: *See*—
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Research Corporation: *See*—
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Rex, Donald K.: *See*—
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Bouchaudon, Jean; Farge, Daniel; and James, Claude, 4,362,716, Cl. 424-177.000.
Locatelli, Jean-Louis, 4,362,832, Cl. 524-102.000.
Millet, Claude; and Soula, Gerard, 4,362,855, Cl. 528-14.000.

Rhone-Poulenc-Textile: *See*—
Arsac, Andre, 4,362,779, Cl. 428-263.000.

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Kelly, Charles J., 4,362,079, Cl. 84-291.000.

Rice, Charles M., to Akzona Incorporated. Yarn actuated stop motion device. 4,362,009, Cl. 57-86.000.

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Schnelle, Manfred; von Reden, Manfred; Pittasch, Willi; and Busse, Peter, 4,361,931, Cl. 16-252.000.

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Biles, Don L.; and Richardson, A. Alan, 4,362,608, Cl. 204-109.000.

Richter, Herbert; and Schaaf, Karl, to Bopp & Reuther GmbH. Spring loaded safety valve. 4,362,183, Cl. 137-489.000.

Ricoh Co., Ltd.: *See*—
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Riecke, Wolfgang D., to Fraunhofer-Gesellschaft Zur Forderung der angewandten Forschung e.v. Chromatically corrected deflecting device for particle-beam equipment. 4,362,945, Cl. 250-396.00R.

Riggle, Charles M.; Pollard, Christopher A.; and Read, John D., to Digital Equipment Corporation. Disk housing for disk drive mass storage unit. 4,363,056, Cl. 360-98.000.

Ringot, Jean, to Schlumberger Technology Corp. Method and apparatus for determining direction parameters of a continuously explored borehole. 4,362,054, Cl. 73-152.000.

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Ritcey, Gordon M.; Price, Kenneth T.; and Lucas, Bernard H., to Canadian Patents and Development Limited. Recovery of copper and zinc from complex chloride solutions. 4,362,607, Cl. 204-108.000.

Ritter, George W., II, to Owens-Corning Fiberglas Corporation. Treatment of glass for high temperature resistance. 4,362,768, Cl. 427-307.000.

Ritter, Gerhard: *See*—
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Ritter, Josef: *See*—
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Riverain Corporation: *See*—
Feller, John, Jr.; and Wells, Stanley C., Jr., 4,362,156, Cl. 604-165.000.

Rivette, Gerard B., to Mid-West Conveyor Company. Selective drive arrangement for roller conveyor. 4,362,238, Cl. 198-781.000.

Rizzutto, Anthony B.: *See*—
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Roach, William R.; and Gorog, Istvan, to RCA Corporation. Sound carrier amplitude measurement system. 4,363,118, Cl. 369-58.000.

Robaldo, Aldo M. Apparatus for polymerization of adhesive resin applied to the junctions of tennis racket netting. 4,361,968, Cl. 34-196.000.

Robert Bosch GmbH: *See*—
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Krotz, Hermann; and Klenk, Robert, 4,361,957, Cl. 30-124.000.
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Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Kopse, Odon; Amaya, Nestor R.; Schlagenhauf, Josef; and Locher, Johannes, 4,362,050, Cl. 73-119.00A.

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Branson, Charles D.; and Shopsky, Harvey J., 4,363,015, Cl. 337-117.000.

Robinson, Antonio. Supplementary composition for and a method of combustion-burning of gasoline. 4,362,130, Cl. 123-1.00A.

Robinson, Delmar W., to UOP Inc. Hydrocarbon conversion catalyst. 4,362,653, Cl. 252-455.00R.

Robinson, Michael A. Cantle saddle. 4,362,003, Cl. 54-44.000.

Roccaforte, Harry I., to Champion International Corporation. Display card with concave panel. 4,362,239, Cl. 206-45.140.

Rockwell International Corporation: *See*—
Clark, Roy, 4,362,387, Cl. 356-338.000.
Eshghy, Siavash, 4,361,945, Cl. 29-407.000.
Ratto, Joseph J.; and Hamermesh, Charles L., 4,362,860, Cl. 528-248.000.
Thomson, Wallace B., 4,362,149, Cl. 126-400.000.

Rodman, William K.; and de St. Denys Prevost, Peter, to Canadian Patents & Development Limited. Method of shucking scallops and an apparatus therefor. 4,361,933, Cl. 17-48.000.

Roelofs, Roelof: *See*—
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Roemer, Peter: *See*—
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Rogers, Laurence J. D. Apparatus for determining weight of cylindrical hay bales. 4,362,097, Cl. 100-99.000.

Rogers, Norman H.; O'Hanlon, Peter J.; and Walker, Graham, to Beecham Group Limited. Antibacterial monic acid esters. 4,362,743, Cl. 424-283.000.

Rohm, Gunter H. Split-jaw lathe chuck. 4,362,306, Cl. 279-121.000.

Roisaeth, Kjell. Devices and method for handling a person on a base. 4,361,918, Cl. 5-81.00R.

Roland, George R., to Levolor Lorentzen, Inc. Panel ceiling and light fixture. 4,363,082, Cl. 362-148.000.

Rolls-Royce Limited: *See*—
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Roneo Alcatel Limited: *See*—
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Rose, John A.; and Dyer, Keith, to AMF Incorporated. Method of and apparatus for top stitching. 4,362,115, Cl. 112-262.300.

Rosenberg, Aaron E.: *See*—
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Ross, Robert M.; and Kristof, George M., to Accu-Back, Inc. Portable folding orthopedic seat. 4,362,334, Cl. 297-230.000.

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Rowan, Donald J.; Rowan, Larry J.; and Rowan, Kenneth L. Overhead hoist assemblies. 4,362,292, Cl. 254-336.000.
Rowan, Hugh H.: *See—*
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Rudolf, Peter: *See—*
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Rumpf, Dietrich: *See—*
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Runkle, Dean E., to Bendix Corporation, The. Pressure limiter for hydraulic brake booster. 4,362,086, Cl. 91-391.00R.
Ruppel, Donald B., to B. F. Goodrich Company, The. Ply turn-up means in a tire building machine. 4,362,592, Cl. 156-402.000.
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Rush, Robert W., Jr.; and Fortlage, Paul R., to MTD Products Inc. Brake and clutch mechanism. 4,362,004, Cl. 56-11.300.
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Sakurai, Akira; and Mizutani, Hiroshi, to Kao Soap Co., Ltd. Tampon. 4,362,159, Cl. 128-285.000.
Sakurai, Soichi; Fukuda, Kyohei; and Takata, Masanobu, to Hitachi, Ltd. Color picture tube with a magnetic focusing device. 4,362,964, Cl. 313-414.000.
Salaun, Andre, to Societe Anonyme dite: Compagnie Generale d'Automatisme. Pump sealing device. 4,362,305, Cl. 277-113.000.
Salisbury, Winfield W., to Occidental Research Corporation. Wireless telemetry with magnetic induction field. 4,363,137, Cl. 455-40.000.
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Sanchez, Charles D. Safety device to actuate railroad car air brake. 4,362,338, Cl. 303-86.000.
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Santen, Sven; and Johansson, Borje, to SKF Steel Engineering Aktiebolag. Method and apparatus for manufacturing sponge iron. 4,362,555, Cl. 75-11.000.
Sanyo Electric Co., Ltd.: *See—*
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Schauer, Walter, to Pierburg GmbH & Co. KG. Mounting a piston in an accelerator pump of a carburetor and associated method. 4,362,673, Cl. 261-34.00A.
Scheinecker, Alois: *See*—
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Schwarzenbek, Eugene F. High porosity catalysts. 4,362,651, Cl. 252-440.000.
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Kanamoto, Yoshitaka; and Ishiodori, Makoto, 4,363,053, Cl. 360-67.000.
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Ohtsuki, Tadashi; Kazami, Shinichi; Anjyu, Shinji; and Tanaka, Masato, 4,363,049, Cl. 360-13.000.
Saito, Etsuro, 4,363,046, Cl. 360-106.000.
Suzuki, Tadao; and Yoshida, Tadao, 4,363,001, Cl. 330-107.000.
Tanaka, Shosuke; and Abe, Fumiyoshi, 4,363,048, Cl. 360-137.000.
Soula, Gerard: *See*—
Millet, Claude; and Soula, Gerard, 4,362,855, Cl. 528-14.000.
Soulard, Roger R.: *See*—
Wu, Edward S.; and Soulard, Roger R., 4,362,100, Cl. 101-233.000.
Sozzi, Tomaso, to Societe D'Assistance Technique pour Produits Nestle S.A. Spreadable cheese having characteristics of crescenza cheese. 4,362,749, Cl. 426-36.000.
Spaepen, Gustaaf J. F.: *See*—
Blanchart, Alain P. O.; Van Bogaert, Gilbert J. L.; De Brandt, Constantine W. M. V. A.; and Spaepen, Gustaaf J. F., 4,362,790, Cl. 429-42.000.
Sparks, Charles, to Institut Francais Du Petrole. Marine riser provided with a hinged foot for offshore hydrocarbon production. 4,362,215, Cl. 166-367.000.
Sparr, Werner, to Carl Schenck AG. Process and apparatus for loading and emptying a store for press supports. 4,362,452, Cl. 414-37.000.
Sparton Corporation: *See*—
Neese, James A., 4,361,952, Cl. 29-594.000.
Spector, George: *See*—
Wagner, David R.; and Spector, George, 4,362,433, Cl. 405-107.000.
Spector, Myron; Kwiatkowski, George T.; Smarook, Walter H.; and Michno, Michael J., Jr., to Union Carbide Corporation. Prosthetic devices having coatings of selected porous bioengineering thermoplastics. 4,362,681, Cl. 264-112.000.
Spence, J. Ronald; and West, C. Thomas, to Standard Oil Company (Indiana). Molybdenum-containing aminated sulfurized olefin lubricating oil additives. 4,362,633, Cl. 252-46.400.
Sperry Corporation: *See*—
Walters, Ronald B., 4,362,084, Cl. 91-47.000.
Sperry Limited: *See*—
Young, David G.; and Finch, Peter D., 4,362,992, Cl. 324-247.000.
Spiegel, Peter: *See*—
Gehrmann, Gerd-Peter; and Spiegel, Peter, 4,362,616, Cl. 210-225.000.
Spilker, James J., Jr.: *See*—
Ramsay, William R.; and Spilker, James J., Jr., 4,363,130, Cl. 455-27.000.
Spink, Ian R., to A/S Akers Mek. Verksted. Supporting device. 4,362,438, Cl. 405-195.000.
Sporlan Valve Company: *See*—
Barbier, William J., 4,362,027, Cl. 62-197.000.
Sprague Electric Company: *See*—
Dwyer, James F., 4,363,078, Cl. 361-433.000.
Sprague, Peter W.: *See*—
Moniot, Jerome L.; Fox, Rita T.; Sprague, Peter W.; and Haslanger, Martin F., 4,362,872, Cl. 542-429.000.
Spranca, Harry P.: *See*—
Ellison, Burlan E.; Spranca, Harry P.; and Hooper, Christopher C., 4,361,998, Cl. 52-520.000.
Sprangle, Phillip A.: *See*—
Chu, Kwo R.; Sprangle, Phillip A.; and Granatstein, Victor L., 4,362,968, Cl. 315-3.500.
Sprecker, Mark A.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,362,657, Cl. 252-522.00R.
Sproul, Nolte V., to Dyneer Corporation. Belt tensioner construction. 4,362,525, Cl. 474-117.000.
Square D Company: *See*—
Swindler, David L., 4,362,915, Cl. 200-144.00R.
Sramek, John A.: *See*—
Caskey, Michele M.; and Sramek, John A., 4,362,638, Cl. 252-90.000.
Srinivasan, Krishnaswamy; and Nguyen, Chinh T., to Hydro-Quebec. Method and system for measuring frequency deviation of low frequency signals. 4,363,099, Cl. 364-484.000.
Stabatrol Corporation: *See*—
Valiga, Richard E.; and Rosso, John R., 4,362,434, Cl. 405-128.000.
Stadler, Jorg; Rentzsch, Max; and Rhau, Siegfried, to Diehl GmbH & Co. Process for the production of metallic formed members. 4,362,563, Cl. 419-5.000.
Stadler, Peter: *See*—
Grohmann, Helmut; and Stadler, Peter, 4,362,709, Cl. 423-636.000.
Stal Refrigeration AB: *See*—
Axelsson, Rolf I., 4,362,472, Cl. 417-53.000.
Stamicarbon, B.V.: *See*—
Bour, Edmond H. J. P.; Warnier, Jean M. M.; and Brouwers, Johannes A. L., 4,362,862, Cl. 528-314.000.
Lemstra, Pieter J.; and Houben, Marcellus J. P., 4,362,844, Cl. 525-57.000.

Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; and Suen, Kwai W., 4,362,827, Cl. 524-9.000.
Weterings, Cornelis A. M., 4,362,705, Cl. 423-167.000.
Stamires, Dennis; and Alafandi, Hamid, to Filtrol Corporation. Cracking catalysts containing silica-alumina gels. 4,362,652, Cl. 252-453.000.
Stamper, James F., to Seymour Division of Lear Siegler, Inc. Trash can hauler. 4,362,309, Cl. 280-47.190.
Standard Oil Company, The: *See*—
Presson, Robert D.; Wu, Hsin-Chih; and Sockell, Edward J., 4,362,603, Cl. 203-75.000.
Standard Oil Company (Indiana): *See*—
Belles, Benjamin P., 4,362,865, Cl. 528-500.000.
Lee, Richard J., 4,362,668, Cl. 260-396.00R.
Nimry, Tayseer S.; and Fields, Ellis K., 4,362,859, Cl. 528-188.000.
Spence, J. Ronald; and West, C. Thomas, 4,362,633, Cl. 252-46.400.
Standex International Corporation: *See*—
Anderson, Leroy E., 4,362,922, Cl. 219-369.000.
Standley, Paul M., to Dayco Corporation. Pneumatic tire. 4,362,200, Cl. 152-153.000.
Stanley Tools Limited: *See*—
Gilbert, Richard, 4,361,958, Cl. 30-162.000.
Stansbury, Jeffrey W.: *See*—
Brauer, Gerhard M.; Argentar, Harold; and Stansbury, Jeffrey W., 4,362,510, Cl. 433-199.000.
Stanton, Leo F., to Bush Universal Inc. Method for stiffening shoe insoles. 4,361,921, Cl. 12-146.00S.
Staples, Phillip E., to Coulter Systems Corporation. Method of toner transfer with pulse bias. 4,362,804, Cl. 430-126.000.
Stark, Marvin; and Adler, Franklin P. Covered hopper car. 4,362,111, Cl. 105-247.000.
Stauffer Chemical Company: *See*—
Berens, George; Padovani, Frank L.; and Timony, Peter E., 4,362,634, Cl. 252-49.500.
Swartz, William E., 4,362,750, Cl. 426-59.000.
Stecker, Walter: *See*—
Adolph, Erich; Bayrak, Unal; Prohl, Robert; and Stecker, Walter, 4,362,914, Cl. 200-144.00B.
Stefansson, Rafn; and McManaman, Raymond M., to Bell & Howell Company. Angular-linear sheet transports. 4,362,298, Cl. 271-236.000.
Steinbock GmbH: *See*—
Klausbruckner, Gert; and Tushaus, Bernd, 4,362,459, Cl. 414-584.000.
Steiner, Gerd; Teschendorf, Hans-Juergen; Kreiskott, Horst; and Hofmann, Hans P., to BASF Aktiengesellschaft. 5-Substituted 9-cyanomethylene-dithieno[3,4-b:4,3-e]-azepines and therapeutic agents which contain these compounds. 4,362,727, Cl. 424-248.510.
Stelcher, William N., to Kinetronics Corporation. Practice weapon including pellet gun mounted within missile firing tube. 4,362,145, Cl. 124-32.000.
Stelling, Walter R., Jr.; Cummins, William A.; and Beaudoin, John F., to Faustel, Inc. Rotary printing press using flexible plates. 4,362,098, Cl. 101-219.000.
Stemme, Otto; Wagensonner, Eduard; and von Fischern, Bernhard, to AGFA-Gevaert Aktiengesellschaft. Apparatus for stepwise transport of photographic film or the like. 4,362,259, Cl. 226-123.000.
Stenzel, Edwin L.: *See*—
Berg, Gerald A.; Buchert, Hermann; Duffy, Steve R.; Harder, Richard E.; Higgs, E. R.; Hoblit, Louis D.; Ryffel, James R.; Smith, Walter P.; and Stenzel, Edwin L., 4,362,682, Cl. 264-143.000.
Stephens, Martin A., to Ecobric Foundry Limited. Apparatus for hot briquetting of ferrous or non-ferrous metallic particles. 4,362,484, Cl. 425-78.000.
Stephenson, Roger C.; and Chaput, Dale T., to Automation Industries, Inc. EMI: X-Ray protected multi-contact connector. 4,362,348, Cl. 339-75.00M.
Sterling Drug Inc.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,362,734, Cl. 424-263.000.
Lesher, George Y.; and Brundage, Ruth P., 4,362,735, Cl. 424-263.000.
Poore, Albert C. G., 4,362,000, Cl. 53-411.000.
Stern, David R., to GTE Automatic Electric Labs Inc. Clock pulse tolerance verification circuit. 4,362,957, Cl. 307-527.000.
Sternberg, Moshe M.: *See*—
Cornelius, Dennis A.; Asmus, Clifford V.; and Sternberg, Moshe M., 4,362,818, Cl. 435-223.000.
Stetson, Robert L.: *See*—
Lang, Linton W.; and Stetson, Robert L., 4,362,691, Cl. 376-267.000.
Stevenson, Fred: *See*—
Lefevre, Lloyd E.; and Stevenson, Fred, 4,362,834, Cl. 524-297.000.
Stevenson, Robert H.: *See*—
McKenney, James L.; and Stevenson, Robert H., 4,362,949, Cl. 307-31.000.
Stich, Frederick A., to Siemens-Allis, Inc. Arcless tap changer for voltage regulator. 4,363,060, Cl. 361-8.000.
Stichting Energieonderzoek Centrum Nederland: *See*—
van Holten, Theodoor, 4,362,469, Cl. 416-191.000.
Stienstra, Jan B.: *See*—
Tiek, Fredericus J. A. M.; and Stienstra, Jan B., 4,362,379, Cl. 355-3.0SH.
Stilwell, Richard M.: *See*—
Goldsmith, Herbert; and Stilwell, Richard M., 4,362,994, Cl. 324-449.000.
Stock, Alvin L., to Westinghouse Electric Corp. Turbine cylinder-seal system. 4,362,464, Cl. 415-136.000.
Stockmann, Michael; and Witte, Hans-Hermann, to Siemens Aktiengesellschaft. Optical star coupler for multi-mode light conducting fibers. 4,362,357, Cl. 350-96.160.
Stoddard, Philip V.: *See*—
Furler, Alan G.; and Stoddard, Philip V., 4,362,166, Cl. 128-670.000.
Stone-Platt Oldham Limited: *See*—
Walton, John M.; and Mather, Anthony H., 4,362,227, Cl. 192-70.280.
Story, Gene F.; and La Belle, John T., to Automotive Environmental Systems, Inc. Temperature achievement controller. 4,362,924, Cl. 219-497.000.
Stoss, Peter: *See*—
Rader, Kurt; and Stoss, Peter, 4,362,730, Cl. 424-256.000.
Stoudt, Thomas H.: *See*—
Dobna, Robert W.; Mayles, B. Allen; and Stoudt, Thomas H., 4,362,621, Cl. 210-450.000.
Strahsner, Emanuel, to Voest-Alpine Aktiengesellschaft. Apparatus for removing dust particles from an air stream. 4,362,540, Cl. 55-257.00C.
Straub, Hermann, to Sulzer Brothers Limited. Casing for an armoured vehicle. 4,362,083, Cl. 89-36.00H.
Streck, Donald A. Intraocular lens. 4,361,913, Cl. 3-13.000.
Strianse, Sabbat J.; Sherry, Howard S.; and Hertzenberg, Elliot P., to PQ Corporation. Cosmetic vehicle. 4,362,715, Cl. 424-78.000.
Stricker, Alfred A.: *See*—
Davis, Gordon T.; Faulkner, Edward H.; Gasparri, Angelo S.; Magee, Robert A.; Remsen, Lawrence P.; Saylor, Dennis L.; and Stricker, Alfred A., 4,362,486, Cl. 425-110.000.
Stropkay, Edward J.: *See*—
Erdos, William A.; and Stropkay, Edward J., 4,362,193, Cl. 141-94.600.
Struve, Alfred: *See*—
Hill, Frank F.; Schindler, Joachim; Schmid, Rolf; Preuss, Wolfgang; and Struve, Alfred, 4,362,815, Cl. 435-172.000.
Stubbs, Vincent K., to ICI Australia Limited. Synergistic tickicidal compositions containing organophosphorus compounds and cyclopropane carboxylates. 4,362,722, Cl. 424-219.000.
Stumpp, Gerhard; Eblen, Ewald; Hofmann, Karl; Kopse, Odon; Amaya, Nestor R.; Schlagenhauf, Josef; and Locher, Johannes, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,362,050, Cl. 73-119.00A.
Sturdy, Harry D.: *See*—
Krueger, Ronald M.; and Sturdy, Harry D., 4,362,138, Cl. 123-342.000.
Sturdy Truck Equipment, Inc.: *See*—
Krueger, Ronald M.; and Sturdy, Harry D., 4,362,138, Cl. 123-342.000.
Subramaniam, Ambati, to NCR Canada Ltd - NCR Canada Ltee. Method and apparatus for compressing digital data using non-adaptive predictive techniques. 4,363,036, Cl. 358-261.000.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. K.G.: *See*—
Hauser, Kurt, 4,362,208, Cl. 165-51.000.
Sudo, Sumio; Anan, Hiromichi; and Yamada, Masayuki, to Hitachi, Ltd. Movable blade pump. 4,362,463, Cl. 415-129.000.
Suen, Kwai W.: *See*—
Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; and Suen, Kwai W., 4,362,827, Cl. 524-9.000.
Sugawara, Toru: *See*—
Amano, Matsuo; Imai, Masumi; Sugawara, Toru; Sakamoto, Shinichi; Miki, Masayuki; and Sasayama, Takao, 4,363,097, Cl. 364-431.110.
Sugihara, Hirosada: *See*—
Imada, Isuke; Sugihara, Hirosada; and Kawada, Mitsuru, 4,362,740, Cl. 424-275.000.
Sugino, Yoshito; and Yamamoto, Norihiko. Simulated shrimp meat and process for preparing same. 4,362,752, Cl. 426-104.000.
Sugishima, Masayuki: *See*—
Machida, Yosihiro; Nakamura, Kenichi; Mifune, Takao; and Sugishima, Masayuki, 4,362,490, Cl. 425-128.000.
Sugiyama, Ikuo: *See*—
Usami, Susumu; Teranishi, Nobuyuki; Kuwako, Tomohisa; Sugiyama, Ikuo; Tsujiuchi, Yoshio; and Hara, Shigeo, 4,362,362, Cl. 350-289.000.
Sugiyama, Kazuo: *See*—
Kuroda, Toshihiko; and Sugiyama, Kazuo, 4,363,005, Cl. 331-112.000.
Sulc, Josef M. Dental attachment structure. 4,362,509, Cl. 433-181.000.
Sullivan, Gerald V.: *See*—
Llewellyn, Thomas O.; and Sullivan, Gerald V., 4,362,615, Cl. 209-167.000.
Sullivan, Thomas J. Method for treating skin disorders. 4,362,742, Cl. 424-283.000.
Sullivan, William B., Jr., to Raytheon Company. Radio frequency receiver. 4,363,139, Cl. 455-324.000.
Sulzer Brothers Limited: *See*—
Straub, Hermann, 4,362,083, Cl. 89-36.00H.
Sumi, Takeshi: *See*—
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, 4,362,203, Cl. 164-16.000.

Sumida, Yasuji: *See*—
Sasaki, Koichi; Sumida, Yasuji; and Ishida, Hiroshi, 4,362,076, Cl. 83-285.000.

Sumitomo Chemical Company, Limited: *See*—
Seino, Junzaburo; Ikeda, Hiroshi; Abo, Washohati; Minami, Iwao; and Fuji, Joji, 4,362,273, Cl. 239-128.000.

Sumitomo Electric Industries: *See*—
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,363,019, Cl. 338-214.000.
Torigai, Eiichi; Wakabayashi, Noboru; Kawami, Yoji; Kamijo, Eiji; Nishimoto, Tatsuya; and Tani, Katsuhito, 4,362,647, Cl. 252-425.300.

Sumitomo Jukikai Envirotech, Inc.: *See*—
Ikari, Yoshikatsu; Yokoyama, Shiyoichiro; Katoh, Keisuke; Itaya, Ryutaro; and Kaga, Toshio, 4,362,571, Cl. 127-55.000.

Sun Metal Products, Inc.: *See*—
Sacks, Martin B., 4,362,202, Cl. 152-325.000.

Sundstrand Corporation: *See*—
Burns, Dennis A., 4,363,068, Cl. 361-91.000.
Sjolund, John R., 4,362,182, Cl. 137-85.000.

Suor, Stephen J.: *See*—
Wick, Charles H.; and Suor, Stephen J., 4,362,197, Cl. 144-364.000.

Superior Industries International, Inc.: *See*—
Shanklin, Donald J., 4,362,036, Cl. 70-167.000.

Surkamp, Paul; and Brock, Josef, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Rotary dobby. 4,362,188, Cl. 139-76.000.

Suzuki, Kihachi: *See*—
Mune, Isao; Suzuki, Kihachi; and Okuno, Toshimitu, 4,362,833, Cl. 524-265.000.

Suzuki, Masahiko: *See*—
Matsui, Kazuma; Kurahashi, Takashi; Suzuki, Masahiko; and Kawaguchi, Kiyoshi, 4,361,927, Cl. 15-250.420.

Suzuki, Masatoshi: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Hamaya, Masahiro; and Ouki, Masami, 4,362,609, Cl. 204-195.00S.

Suzuki, Naoyoshi: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,362,268, Cl. 236-13.000.

Suzuki, Nobuhiro, to Tomy Kogyo Co., Inc. Amusement device with fluid movable articulated member. 4,362,299, Cl. 273-1.00L.

Suzuki, Ryozo; Murakami, Sadatoshi; Harada, Tatsumi; Fujiwara, Hiroyuki; and Yamasaki, Satoru, to Mitsubishi Denki Kabushiki Kaisha. Rotary roller vane pump made of specific materials. 4,362,480, Cl. 418-152.000.

Suzuki, Tadao; and Yoshida, Tadao, to Sony Corporation. Digital gain control apparatus. 4,363,001, Cl. 330-107.000.

Suzuki, Yujiro; Mirua, Norio; and Shimiya, Keiji, to Kasei Optonix Ltd. Radiographic intensifying screen. 4,362,944, Cl. 250-483.100.

Suzuki, Zituo: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,362,495, Cl. 425-376.00A.

Svenska Traforskningsinstitutet: *See*—
Lindstrom, Tom S. C.; and Westman, Lennart H., 4,362,600, Cl. 162-55.000.

Svoboda, Josef, to TMC Corporation. Safety-straplike connecting member. 4,362,314, Cl. 280-637.000.

Svoma, Joseph H. Fishing line sinker and mold for making same. 4,361,976, Cl. 43-43.100.

Swaidner, James A.; and Holzhauer, Wendell C., to Manville Service Corporation. Seal for heated enclosure. 4,362,676, Cl. 264-35.000.

Swartz, William E., to Stauffer Chemical Company. Production of fermented type sausage. 4,362,750, Cl. 426-59.000.

Swindler, David L., to Square D Company. Electric arc confining device. 4,362,915, Cl. 200-144.00R.

Sybron Corporation: *See*—
Larson, Melvin L., 4,362,649, Cl. 252-430.000.

Sykes, Richard B.; Wells, Jerry S.; and Parker, William L., to E. R. Squibb & Sons, Inc. Process for preparing 1-carba-2-penem-3-carboxylic acid. 4,362,814, Cl. 435-119.000.

Sylvan, Richard: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 4,362,196, Cl. 144-286.00R.

Sylvester, Donald D., to Dentek Systems, Inc. Water-cooled light source. 4,363,080, Cl. 362-32.000.

Syntronics Music Corporation: *See*—
McLey, David M., 4,362,934, Cl. 250-229.000.

Szalkiewicz, Andrew: *See*—
Diamond, Steven E.; Mares, Frank; and Szalkiewicz, Andrew, 4,362,671, Cl. 260-465.50R.

Sze, Daniel T. W.: *See*—
Davis, Michael I.; and Sze, Daniel T. W., 4,363,093, Cl. 364-200.000.

T. B. Wood's Sons Company: *See*—
Wisman, Franklin D., 4,363,089, Cl. 363-137.000.

Tabar, Ronald J.; Killgoar, Paul C., Jr.; and Lemieux, Marvin A., to Ford Motor Company. Soft, heat and fatigue resistant elastomeric articles. 4,362,840, Cl. 524-525.000.

Tabb, David L.; and Tyhach, Richard J., to Miles Laboratories, Inc. Homogeneous specific binding assay test device having copolymer enhancing substance. 4,362,697, Cl. 422-56.000.

Tabor, Paul R., to Hydrocarbon Research, Inc. Method of in situ oil extraction using hot solvent vapor injection. 4,362,213, Cl. 166-267.000.

Tacheny, John C.; Paulson, Gary F.; and Natzel, Jerome W., to Truth Incorporated. Patio door lock. 4,362,328, Cl. 292-36.000.

Tacke, Peter: *See*—
Korber, Helmut; Tacke, Peter; Fahnler, Friedrich; Neuray, Dieter; and Heydenreich, Frieder, 4,362,846, Cl. 525-66.000.

Taglavore, Anthony H. Adjustable fireplace panel. 4,362,147, Cl. 126-140.000.

Taguchi, Yoshiaki: *See*—
Fujita, Hiroyuki; Ashida, Shigeki; Taguchi, Yoshiaki; and Sakai, Masami, 4,362,760, Cl. 426-641.000.

Tai, Anthony M., to Environmental Research Institute of Michigan. Computation module for addition and multiplication in residue arithmetic. 4,363,106, Cl. 364-746.000.

Takada, Hiroshi: *See*—
Yamazaki, Hitoshi; Ito, Hiroshi; Doi, Sadaharu; Imai, Jun; and Takada, Hiroshi, 4,362,123, Cl. 118-642.000.

Takahashi, Kihei, to Yoshida Kogyo K.K. Apparatus for manufacturing slide fastener chains having solid sections. 4,362,487, Cl. 425-111.000.

Takahashi, Naoyuki, to Olympus Optical Co., Ltd. Operating microscope assembly. 4,362,355, Cl. 350-84.000.

Takamatsu, Hideo: *See*—
Minatono, Shobu; and Takamatsu, Hideo, 4,362,841, Cl. 524-531.000.

Takamatsu, Tadahiro, to Yoshida Kogyo K.K. Method of and apparatus for attaching sliders and top end stops for slide fasteners. 4,361,946, Cl. 29-408.000.

Takano, Yashuharu: *See*—
Tanaka, Masashi; Fujii, Nobuhiro; and Takano, Yashuharu, 4,363,083, Cl. 362-216.000.

Takasaki, Yasuto: *See*—
Kajikawa, Shuji; Kanai, Kazuo; Ito, Haruo; Hirata, Yoshihisa; Konishi, Jiro; Takasaki, Yasuto; Ohkoshi, Kenji; and Yanagida, Yoshinobu, 4,362,504, Cl. 432-83.000.

Takata, Masanobu: *See*—
Sakurai, Soichi; Fukuda, Kyohei; and Takata, Masanobu, 4,362,964, Cl. 313-414.000.

Takatsuka, Kouro: *See*—
Yamaguchi, Yoshihiro; Takatsuka, Kouro; Murakami, Shohei; Ogawa, Rikuo; Yamada, Yoshiro; Yokoyama, Tadamasa; and Akita, Shoji, 4,362,040, Cl. 72-201.000.

Takeda Chemical Industries, Ltd.: *See*—
Imada, Isuke; Sugihara, Hirosada; and Kawada, Mitsuru, 4,362,740, Cl. 424-275.000.
Kida, Makoto; Izawa, Motowo; and Nakahama, Kazuo, 4,362,663, Cl. 260-239.30P.
Nagase, Hiroshi, 4,362,546, Cl. 71-88.000.
Takeuchi, Tatsuro; Sokukawa, Masaki; and Kimoto, Ryuzo, 4,362,626, Cl. 210-670.000.

Takeda, Masaaki: *See*—
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; and Takeda, Masaaki, 4,362,736, Cl. 424-270.000.

Takei, Haruo: *See*—
Mihara, Yuji; Ikeda, Tadashi; Takei, Haruo; Okazaki, Masaki; and Aotsuka, Yasuo, 4,362,813, Cl. 430-550.000.

Takei, Yutaka: *See*—
Kimura, Hiroshi; Abiko, Kenji; Sato, Takashi; Yoshii, Isamu; Watanabe, Sadao; and Takei, Yutaka, 4,362,581, Cl. 148-31.550.

Takeuchi, Tatsuro; Sokukawa, Masaki; and Kimoto, Ryuzo, to Takeda Chemical Industries, Ltd. Ion exchanger of hydrated oxide of Ti, Zr, or Sn and cured polyester, and exchange method. 4,362,626, Cl. 210-670.000.

Takeyama, Morio: *See*—
Masuhara, Eiichi; Nakabayashi, Nobuo; Nagata, Katsuhisa; and Takeyama, Morio, 4,362,842, Cl. 524-854.000.

Takimoto, Hiroyuki: *See*—
Maeda, Masaya; Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,363,051, Cl. 360-33.100.

Takimoto, Masaaki; Sawada, Kenichi; and Kawamura, Kouichi, to Fuji Photo Film Co., Ltd. Sensitized photoconductive compositions and electrophotographic photosensitive layers using such. 4,362,800, Cl. 430-83.000.

Takiron Co., Ltd.: *See*—
Shikinami, Yasuo, 4,362,773, Cl. 428-90.000.

Talon, Inc.: *See*—
Sen Gupta, Sisir K.; and Becker, Wayne A., 4,362,116, Cl. 112-265.200.

Talres Development (N.A.) N.V.: *See*—
Jenner, Michael R.; Waite, David; Jackson, Graham; and Williams, John C., 4,362,869, Cl. 536-122.000.

Tanabe, Kenjiro: *See*—
Yonehara, Hiroyuki; Kimura, Yoshikazu; and Tanabe, Kenjiro, 4,362,383, Cl. 355-71.000.

Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, to Shionogi & Co., Ltd. Antibiotic PA-39504-X_1 and production thereof. 4,362,665, Cl. 260-245.20T.

Tanaka, Masashi; Fujii, Nobuhiro; and Takano, Yashuharu, to Toshiba Electric Equipment Corporation. Screw-based incandescent lamp type fluorescent lamp. 4,363,083, Cl. 362-216.000.

Tanaka, Masashi: *See*—
Ihochi, Takahiko; Tanaka, Masashi; Kojima, Kazuo; and Nakajima, Yutaka, 4,362,400, Cl. 368-255.000.

Tanaka, Masato: *See*—
Ohtsuki, Tadashi; Kazami, Shinichi; Anjyu, Shinji; and Tanaka, Masato, 4,363,049, Cl. 360-13.000.

Tanaka, Shosuke; and Abe, Fumiyoshi, to Sony Corporation. Time counting clock generator. 4,363,048, Cl. 360-137.000.

Tanaka, Susumu; Nagai, Koji; and Inagaki, Sanzi, to Minolta Camera Kabushiki Kaisha. Powdery developing material for electrophotographic reproduction. 4,362,802, Cl. 430-106.600.
Tanaka, Taku: *See—*
Yamashita, Shuzo; Tanaka, Taku; Tanii, Hirokuni; Kubotsu, Akira; and Kawai, Syuji, 4,362,677, Cl. 264-41.000.
Taner, Mehmet T.; Koehler, Fulton; Anstey, Nigel A.; and Castelberg, Michael J., to Seiscom Delta, Inc. Seismic exploration with simulated plane waves. 4,363,113, Cl. 367-63.000.
Tani, Katsuhito: *See—*
Torigai, Eiichi; Wakabayashi, Noboru; Kawami, Yoji; Kamijo, Eiji; Nishimoto, Tatsuya; and Tani, Katsuhito, 4,362,647, Cl. 252-425.300.
Taniel, Gerard: *See—*
Permudin, Claude; Amarge, Edmond; Guiho, Jean P.; Horiot, Jean C.; Taniel, Gerard; Viel, Georges; and Brethon, Jean P., 4,362,947, Cl. 378-150.000.
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Andersson, Bengt; and Tanner, Olof, 4,362,778, Cl. 428-240.000.
Tatarnikov, Viktor P.: *See—*
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Taudt, Heinz, to Dr.-Ing. Rudolf Hell GmbH. Apparatus and process for recording an image free of line structure. 4,363,037, Cl. 358-296.000.
Taylor, Chauncey D.; and Sims, Herbert E., to Hydrapak Corporation. Cotton loader and packer. 4,362,457, Cl. 414-345.000.
Taylor, Patrick R.; and Vanderloop, Jonathan P. Cobalt leaching process. 4,362,704, Cl. 423-150.000.
Taylor, Thomas Lee: *See—*
Bell, Roland G., 4,362,446, Cl. 408-211.000.
TDK Electronics Co., Ltd.: *See—*
Matsuzawa, Yoneo; Kawakami, Yoshio; and Kajimoto, Norifumi, 4,363,059, Cl. 360-132.000.
Yamamoto, Hirotaka; Obara, Minoru; and Fujiwara, Shinobu, 4,363,088, Cl. 363-59.000.
Technicon Instruments Corporation: *See—*
de Steenwinkel, Floris; Collet-Cassart, Daniel; and Masson, Pierre L., 4,362,531, Cl. 23-230.00B.
Techniques Industrielles et Minieres: *See—*
Casanova, Paul, 4,362,337, Cl. 299-31.000.
Teibow Company Limited: *See—*
Otsuka, Katsumi; and Shimoishi, Tetsuo, 4,362,683, Cl. 264-167.000.
Teichmann, Theodor; Gomberg, Henry J.; and Teitel, Robert J., to Texas Gas Transmission Corporation. Production of hydrogen-based gaseous fuel. 4,362,689, Cl. 376-148.000.
Teijin Limited: *See—*
Ono, Syoji; Fukumoto, Yuji; and Yoshida, Tsunemasa, 4,362,661, Cl. 260-112.00B.
Teitel, Robert J.: *See—*
Teichmann, Theodor; Gomberg, Henry J.; and Teitel, Robert J., 4,362,689, Cl. 376-148.000.
Tektronix, Inc.: *See—*
Davenport, William H., 4,362,955, Cl. 307-263.000.
Teledyne Industries, Inc.: *See—*
Mills, Gary L.; and Bowen, B. Dean, 4,362,578, Cl. 148-11.50N.
Tellabs, Inc.: *See—*
Chambers, Charles W., Jr., 4,363,008, Cl. 333-24.00R.
Terami, Koji; and Fujimoto, Isao, to Sanyo Electric Co., Ltd. Station selecting apparatus. 4,363,136, Cl. 455-180.000.
Teranishi, Nobuyuki: *See—*
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Tetra Pak International Aktiebolag: *See—*
Utsumi, Yoshikazu, 4,362,075, Cl. 83-42.000.
Texaco Inc.: *See—*
Dominguez, Richard J. G.; and Rice, Doris M., 4,362,824, Cl. 521-118.000.
Knifton, John F., 4,362,822, Cl. 518-700.000.
Lin, Jiang-Jen, 4,362,821, Cl. 518-700.000.
Texas Gas Transmission Corporation: *See—*
Kummler, Ralph H.; and Leite, Richard J., 4,362,690, Cl. 376-148.000.
Teichmann, Theodor; Gomberg, Henry J.; and Teitel, Robert J., 4,362,689, Cl. 376-148.000.
Texas Instruments Incorporated: *See—*
Holland, Varnum S., 4,362,984, Cl. 323-313.000.
Piliavin, Michael A.; and Toker, James R., 4,363,029, Cl. 340-501.000.
Textron, Inc.: *See—*
Cresap, Wesley L.; Myers, Alan W.; and Viswanathan, Sathy P., 4,362,281, Cl. 244-17.270.
DeCaro, Charles J., 4,361,997, Cl. 52-512.000.
Teyssie, Philippe T.; Jerome, Robert J.; and Broze, Guy J., to Unibra Societe Anonyme. Process for preparing products containing polymer chains having ionic links and their use. 4,362,837, Cl. 524-400.000.
Thalenfeld, David R., to Trion Industries, Inc. Positive locking merchandise hook. 4,362,249, Cl. 211-59.100.
Thaler, Warren A.: *See—*
Agarwal, Pawan K.; and Thaler, Warren A., 4,362,828, Cl. 524-66.000.
Thalmann, Alfred, to George Fischer Aktiengesellschaft. Process and apparatus for making a welding sleeve. 4,362,684, Cl. 264-230.000.
Theakston, Franklyn H., to Guelph Manufacturing Group Ltd., The. Solar powered refrigeration apparatus. 4,362,025, Cl. 62-148.000.
Theodore, Frank W.: *See—*
Wasson, George E.; and Theodore, Frank W., 4,362,532, Cl. 44-23.000.
Thermatool Corp.: *See—*
Rudd, Wallace C., 4,362,921, Cl. 219-61.200.
Thiermann, William E., Sr., to Racine Federated Inc. Pole-setting apparatus. 4,362,451, Cl. 414-23.000.
Thimander, Bengt. Anchor hoist. 4,362,119, Cl. 114-210.000.
Thomas, Evan S.: *See—*
Bird, Kenneth I. W.; and Thomas, Evan S., 4,362,534, Cl. 44-62.000.
Thome, Roland: *See—*
Kruger, Jorg; Thome, Roland; Moritz, Dieter; Bings, Hubert; and Losert, Herbert, 4,362,701, Cl. 422-194.000.
Thompson, Thomas K., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing glass fibers or filaments. 4,362,541, Cl. 65-2.000.
Thomson-CSF: *See—*
Collin, Claude, 4,363,132, Cl. 455-52.000.
Grancoin, Bernard; and Pepin, Christian, 4,363,034, Cl. 358-213.000.
Thomson, Wallace B., to Rockwell International Corporation. Heat storage system and method. 4,362,149, Cl. 126-400.000.
Tick, Paul A.: *See—*
Olszewski, Anthony R.; Tick, Paul A.; and Sanford, Leon M., deceased, 4,362,819, Cl. 501-44.000.
Tiek, Fredericus J. A. M.; and Stienstra, Jan B., to OCE-Nederland B.V. Apparatus suitable for producing duplex copies from simplex originals. 4,362,379, Cl. 355-3.0SH.
Tiffany Industries, Inc.: *See—*
Seesengood, Robert E., 4,361,930, Cl. 16-38.000.
Tillman, Jerry W. Wrench. 4,362,072, Cl. 81-57.290.
Timex Corporation: *See—*
Jackson, Michael, 4,362,398, Cl. 368-240.000.
Timofeev, Vitaly M.: *See—*
Bubelo, Vilya V.; Timofeev, Vitaly M.; Ganzhara, Vladimir I.; and Froze, Raisa M., 4,362,505, Cl. 432-148.000.
Timony, Peter E.: *See—*
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Tin, Kam C.: *See—*
Bharucha, Kekhusroo R.; Tin, Kam C.; Ajdukovic, Iva; and Ajdukovic, Djordje, 4,362,746, Cl. 424-330.000.
Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; and Suen, Kwai W., to Methanol Chemic Nederland V.O.F.; and Stamicarbon B.V. Manufacture of chipboard. 4,362,827, Cl. 524-9.000.
Tissot, Pierre L. Chess clock. 4,362,393, Cl. 368-96.000.
TMC Corporation: *See—*
Svoboda, Josef, 4,362,314, Cl. 280-637.000.
Toho Beslon Co., Ltd.: *See—*
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Tokyo Kogyo Co., Ltd.: *See—*
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Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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Toman, George M.: *See—*
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Tomy Kogyo Co., Inc.: *See—*
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Tonoki, Satoshi; Hirobe, Kazushi; Osawa, Tadashi; and Nishigaki, Masahiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Modified polyalkylene terephthalate composition. 4,362,839, Cl. 524-513.000.
Toombs, Gary C.: *See—*
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,362,349, Cl. 339-89.00M.
Toplan Manufacturing Inc.: *See—*
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Toppan Printing Co., Ltd.: *See—*
Kato, Takeo; and Fukuda, Nobuyoshi, 4,362,784, Cl. 428-340.000.
Toray Industries, Inc.: *See—*
Hasegawa, Katsumi; Kawabata, Takahiro; and Ueda, Hiroshi, 4,362,260, Cl. 226-190.000.

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Torigai, Eiichi; Wakabayashi, Noboru; Kawami, Yoji; Kamijo, Eiji; Nishimoto, Tatsuya; and Tani, Katsuhito, to Agency of Industrial Science & Technology; and Sumitomo Electric Industries. Electrode and the method for producing the same. 4,362,647, Cl. 252-425.300.
Torii, Satoru, to Kobe Steel, Ltd. Hydraulic rotation control circuit. 4,362,018, Cl. 60-468.000.
Toriumi, Yasuo: *See—*
Miyamoto, Yoshimi; Kojima, Keiichi; and Toriumi, Yasuo, 4,363,019, Cl. 338-214.000.
Toshiba Electric Equipment Corporation: *See—*
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Toshiba Kikai Kabushiki Kaisha: *See—*
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Toshiro, Tahara; and Izumi, Seto, to Fuji Photo Film Co., Ltd. Apparatus including a circulating chain for conveying photosensitive material. 4,362,375, Cl. 354-320.000.
Toth, Ferenc: *See—*
Sinka, Gabor; Miskei, Mihaly; Toth, Ferenc; Revesz, Laszlo; and Schlegel, Miklos, 4,362,606, Cl. 204-105.00R.
Toti, Andrew J. Apparatus and method for producing foldable metal drape panels. 4,362,039, Cl. 72-186.000.
Totsuka, Kaoru: *See—*
Haramoto, Yutaka; Ishigaki, Yukinobu; Totsuka, Kaoru; and Kawasaki, Takao, 4,363,007, Cl. 333-14.000.
Towmotor Corporation: *See—*
Wible, John E., 4,362,351, Cl. 339-214.00R.
Toyo Seikan Kaisha, Ltd.: *See—*
Yabe, Kenji; Asakura, Masayoshi; Sano, Hiroki; and Aizawa, Masanori, 4,362,775, Cl. 428-213.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Masaki, Kunihiko; Kitagawa, Naoto; and Yamada, Kosaku, 4,362,319, Cl. 280-779.000.
Ogura, Mitsuhiro; and Saito, Toshio, 4,362,320, Cl. 280-802.000.
Tracy, Charles H. Large poster apparatus and method of constructing for back-lighted signboard. 4,362,591, Cl. 156-300.000.
Transamerica Delaval, Inc.: *See—*
Miller, Alan H.; and Reese, Ira W., 4,362,919, Cl. 219-137.00R.
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Trion Industries, Inc.: *See—*
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Truth Incorporated: *See—*
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Trutna, William R., Jr.: *See—*
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TRW Inc.: *See—*
Franklin, Sidney B.; Garabedian, Arthur; Hoffman, Curtis S.; Huang, Marshall Y.; and Marcum, Robert B., 4,363,138, Cl. 455-226.000.
Martin, Jon W., 4,362,569, Cl. 106-307.000.
Tsing, John Y. H.: *See—*
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Tsuchiya, Chikara, to Fujitsu Limited. Integrated circuit for generating a reference voltage. 4,362,985, Cl. 323-314.000.
Tsui, Kwok W.: *See—*
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Tsuji, Masahiro, to Nihon Kogyo Kabushiki Kaisha. High-strength-conductivity copper alloy. 4,362,579, Cl. 148-11.50C.
Tsuji, Naoki: *See—*
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,362,665, Cl. 260-245.20T.
Tsujiuchi, Yoshio: *See—*
Usami, Susumu; Teranishi, Nobuyuki; Kuwako, Tomohisa; Sugiyama, Ikuo; Tsujiuchi, Yoshio; and Hara, Shigeo, 4,362,362, Cl. 350-289.000.
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, to Pioneer Electronic Corporation. Vibratory elements for audio equipment. 4,362,772, Cl. 428-36.000.
Tsukioka, Hideaki: *See—*
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Tsukishima Kikai Co., Ltd.: *See—*
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Tumber, Brian W., to Lucas Industries Limited. Variable capacitor transducer. 4,363,073, Cl. 361-292.000.
Tung, Lu H.; Kirkby, Larry L.; and Lyons, Charles E., to Dow Chemical Company, The. Preparation of alkenyl aromatic monomer butadiene rubber and preparation of impact resistant resin therefrom. 4,362,849, Cl. 525-316.000.
Turczanski, Henryk. Contact electrodes for reed switches. 4,363,011, Cl. 335-154.000.
Turner, Charles S.; McNeal, Donald J.; Cheshier, Donald G.; and Gray, James C., to Control Technology. Cycle charge standby power system. 4,362,951, Cl. 307-66.000.
Turner, Joe S. Synchronous inverter compatible with commercial power. 4,362,950, Cl. 307-45.000.
Turner, Keith E.: *See—*
Dunstan, David I.; Turner, Keith E.; and Lane, David W., 4,361,984, Cl. 47-58.000.
Tushaus, Bernd: *See—*
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Tuttle, David R.: *See—*
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Tuttle, Thomas G.: *See—*
Zinkann, Paul J.; Tuttle, David R.; and Tuttle, Thomas G., 4,362,422, Cl. 403-387.000.
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Tyrell, John A.: *See—*
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Uchida, Shinya, to Laurel Bank Machine Co., Ltd. Discharge side indicator device for cash discharge apparatus. 4,362,112, Cl. 109-19.000.
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Ueda, Kazuo: *See—*
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Ueda, Yoshiaki. Paint strainer. 4,362,624, Cl. 210-497.200.
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Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, 4,363,013, Cl. 336-60.000.
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Uemura, Takeshi: *See—*
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Ueno, Katsusuke: *See—*
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Uffner, William E.; and White, Robert N., to Owens-Corning Fiberglas Corporation. Polyamide as a primer for use with asphaltic membranes. 4,362,586, Cl. 156-71.000.
Uhlig, Albert R., to Owens-Illinois, Inc. Apparatus for making plastic articles. 4,362,496, Cl. 425-379.00R.
Ulin, Roy A.: *See—*
Hof, Craig R.; and Ulin, Roy A., 4,362,645, Cl. 252-408.100.
Umeda, Takao; Igawa, Tatsuo; Simazaki, Yuzuru; Miyashita, Takao; and Nakano, Fumio, to Hitachi, Ltd. Liquid crystal display element with gap controlling material and process for production thereof. 4,362,771, Cl. 428-1.000.
Unger, Robert P., to AMF Incorporated. Circuit breaker. 4,363,016, Cl. 337-56.000.
Unibra Societe Anonyme: *See—*
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Unimation, Inc.: *See—*
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Union Carbide Corporation: *See—*
Kamp, Ewald A., 4,362,198, Cl. 150-3.000.
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Spector, Myron; Kwiatkowski, George T.; Smarook, Walter H.; and Michno, Michael J., Jr., 4,362,681, Cl. 264-112.000.
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United Kingdom Atomic Energy Authority: *See—*
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Agriculture: *See—*
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F'Geppert, Erwin, 4,362,326, Cl. 285-315.000.
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Whiteley, Isaac C. Air circulating device and method. 4,362,090, Cl. 98-33.00A.

Whitfield, Therman C., to Emhart Industries, Inc. Hollow article internal pressure forming apparatus and method. 4,362,037, Cl. 72-58.000.

Whitmore, Keith E., to Eastman Kodak Company. Imaging with nonplanar support elements. 4,362,806, Cl. 430-202.000.

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Widrow, Bernard. Apparatus and method for determining the position of a gas-saturated porous rock in the vicinity of a deep borehole in the earth. 4,363,112, Cl. 367-30.000.

Wiese, Harold. Seating and guard rail structure for bleachers. 4,361,991, Cl. 52-9.000.

Wilbur, Robert W. Illuminated greeting cards. 4,363,081, Cl. 362-98.000.

Wilhelm, Gary, to Llama Gabilondo Y. CIA. S.A. Semiautomatic hand gun. 4,361,975, Cl. 42-69.00R.

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Williams, Donald L., to Champion International Corporation. Container. 4,362,265, Cl. 229-32.000.

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Yagishita, Teruo; Okada, Seiji; Narusawa, Toshiaki; and Okuyama, Hirofumi, to Fujitsu Limited. Copper phthalocyanine photosensitive material for electrophotography with binder and an oxadiazole. 4,362,801, Cl. 430-83.000.
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Yoshino, Tsunemi: *See*—
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Young, Charles W., to Dominion Textile, Inc. Automatic mixing and cloth bleaching control. 4,362,033, Cl. 68-207.000.

Young, Dale A., to Exxon Research and Engineering Co. Side stream monitoring. 4,362,630, Cl. 210-745.000.

Young, David G.; and Finch, Peter D., to Sperry Limited. System and method of detecting the proximity of an alternating magnetic field. 4,362,992, Cl. 324-247.000.

Young, Ian R.; Burl, Michael; and Clarke, Graham J., to Picker International Limited. Imaging systems. 4,362,993, Cl. 324-309.000.

Young, Robert F.: *See*—
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Yuen, Johnny S. C.: *See*—
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Zanni, Paolo, to FIAP S.r.l. Combined gas lighter-bottle opener. 4,361,920, Cl. 7-151.000.

Zapf, Otto; and Kuchinke, Josef, to Zapf, Otto. Sliding chair. 4,362,336, Cl. 297-317.000.

Zeag Systems A.G.: *See*—
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ZeCo, Incorporated: *See*—
Coggins, George G., 4,363,072, Cl. 361-231.000.

Zeilon, Sten O. Rotary compressor for gas and liquid mixtures. 4,362,473, Cl. 417-68.000.

Zendle, Bernard; and Petree, Marcella, to United States of America, Navy. Flush mounted low impedance grounding cone. 4,362,898, Cl. 174-35.00R.

Zenith Radio Corporation: *See*—
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Ziegler, Alfred, to Siemens Aktiengesellschaft. Apparatus and method for initiation of reciprocal remote feeding of intermediate stations of a communication installation. 4,362,952, Cl. 307-77.000.

Ziman, Stephen D., to Chevron Research Company. Herbicidal and plant-growth-regulating N-substituted-N-(2,5-dialkylpyrrol-1-yl) haloacetamides. 4,362,548, Cl. 71-90.000.

Zimmer, Peter. Provision for rotatable bearing of a cylindrical device in a bearing housing. 4,362,345, Cl. 308-207.00R.

Zimmermann & Jansen Gesellschaft mit Beschrankter Haftung: *See*—
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Zinkann, Paul J.; Tuttle, David R.; and Tuttle, Thomas G. Grating fastener. 4,362,422, Cl. 403-387.000.

Zinnen, Norbert; Mirtain, Henri J.; and Arends, Harm J., to Uniroyal Englebert Reifen GmbH. Tread profile for pneumatic vehicle tires. 4,362,201, Cl. 152-209.00R.

Zlatin, David A.: *See*—
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Zwyssig, Jules, to Georg Fischer Aktiengesellschaft. Ultrasonic testing method and apparatus. 4,362,059, Cl. 73-628.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF DECEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barbe', Pier C.: *See*—
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Cardiokinetics, Inc.: *See*—
Vas, Ran; Forrester, James S.; and Diamond, George A., Re. 31,097, Cl. 128-687.000.

Diamond, George A.: *See*—
Vas, Ran; Forrester, James S.; and Diamond, George A., Re. 31,097, Cl. 128-687.000.

Forrester, James S.: *See*—
Vas, Ran; Forrester, James S.; and Diamond, George A., Re. 31,097, Cl. 128-687.000.

Hoover Company, The: *See*—
Tschudy, Donald B., Re. 31,095, Cl. 15-383.000.

Johnston, James R. Coupling device. Re. 31,096, Cl. 24-374.000.

Luciani, Luciano: *See*—
Scata', Umberto; Luciani, Luciano; and Barbe', Pier C., Re. 31,099, Cl. 252-429.00B.

Lyet, J. Paul, II: *See*—
Mast, Aquila D.; and Lyet, J. Paul, II, Re. 31,098, Cl. 406-71.000.

Mast, Aquila D.; and Lyet, J. Paul, II, to Sperry Corporation. Feed material handling apparatus. Re. 31,098, Cl. 406-71.000.

Montedison S.p.A.: *See*—
Scata', Umberto; Luciani, Luciano; and Barbe', Pier C., Re. 31,099, Cl. 252-429.00B.

Scata', Umberto; Luciani, Luciano; and Barbe', Pier C., to Montedison S.p.A. Catalysts and catalyst components for polymerizing olefins. Re. 31,099, Cl. 252-429.00B.

Sperry Corporation: *See*—
Mast, Aquila D.; and Lyet, J. Paul, II, Re. 31,098, Cl. 406-71.000.

Tschudy, Donald B., to Hoover Company, The. Agitator chamber. Re. 31,095, Cl. 15-383.000.

Vas, Ran; Forrester, James S.; and Diamond, George A., to Cardiokinetics, Inc. Apparatus and method for detecton of body tissue movement. Re. 31,097, Cl. 128-687.000.

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Abbott Laboratories: *See*—
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AGA Aktiebolag: *See*—
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Amaki, Kiyoshi: *See*—
Suzuki, Toshiyuki; and Amaki, Kiyoshi, 267,167, Cl. D12-205.000.
Suzuki, Toshiyuki; and Amaki, Kiyoshi, 267,169, Cl. D12-205.000.

AMF Incorporated: *See*—
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Ansel, Ferman: *See*—
Gessing, Julie M.; Gessing, Dennis; Matherly, John F.; and Ansel, Ferman, 267,143, Cl. D7-76.000.

Appor Limited: *See*—
Banks, Stewart, 267,136, Cl. D6-95.000.

Baker, Arthur L. Draft control knob for a wood burning stove or the like. 267,194, 12-7-82, Cl. D23-127.000.

Banks, Stewart, to Appor Limited. Dispenser for liquids or the like. 267,136, 12-7-82, Cl. D6-95.000.

Bell & Howell Company: *See*—
Kiesow, Charles H.; and Johnson, Allen E., 267,180, Cl. D16-14.000.

Berkline Corporation, The: *See*—
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Bilgutay, Ilhan M. Probe cover. 267,154, 12-7-82, Cl. D10-60.000.

Bondwell Electronics Ltd.: *See*—
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Borofsky, Margaret; and Borofsky, Robert L. Adjustable necklace or bracelet. 267,159, 12-7-82, Cl. D11-5.000.

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Buschmann, Sylvester. Artifact plaque. 267,162, 12-7-82, Cl. D11-133.000.

C & C Metal Products Corp.: *See*—
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Claman, Mike T., to Lewittes Furniture Enterprises, Inc. Chair. 267,133, 12-7-82, Cl. D6-57.000.

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339 4,362,093
342 4,362,094
472 4,362,095

CLASS 100

10 4,362,096
99 4,362,097

CLASS 101

219 4,362,098
230 4,362,099
233 4,362,100
327 4,362,101
348 4,362,102
4,362,103
349 4,362,104
410 4,362,105

CLASS 102

207 4,362,106
520 4,362,107

CLASS 104

94 4,362,108

CLASS 105

176 4,362,110
182 R 4,362,109
247 4,362,111

CLASS 106

21 4,362,565
85 4,362,566
157 4,362,567
232 4,362,568
307 4,362,569
311 4,362,570

CLASS 109

19 4,362,112

CLASS 112

199 4,362,113
217.2 4,362,114
262.3 4,362,115
265.2 4,362,116

CLASS 114

150 4,362,117
201 R 4,362,118
210 4,362,119
265 4,362,120
353 4,362,519

CLASS 116

34 R 4,362,121

CLASS 118

600 4,362,122
642 4,362,123
698 4,362,124
712 4,362,125

CLASS 119

1 4,362,126
14.03 4,362,127
28 4,362,128

CLASS 122

7 R 4,362,129

CLASS 123

1 A 4,362,130
41.1 4,362,131
73 D 4,362,132
179 K 4,362,133
188 AA 4,362,134
193 P 4,362,135
4,362,136
295 4,362,137
342 4,362,138
364 4,362,139
366 4,362,140
449 4,362,141
549 4,362,142
556 4,362,143
609 4,362,144

CLASS 124

32 4,362,145

CLASS 126

77 4,362,146
140 4,362,147
369 4,362,148
400 4,362,149

CLASS 127

55 4,362,571

CLASS 128

1 D 4,362,150
75 4,362,151
79 4,362,152
202.26 4,362,153
204.22 4,362,154
214 R 4,362,155
215 4,362,157
272 4,362,158
285 4,362,159
303.15 4,362,160
310 4,362,161
334 R 4,362,162
639 4,362,164
640 4,362,165
670 4,362,166
687 Re.31,097
778 4,362,167

CLASS 130

27 H 4,362,168

CLASS 131

196 4,362,169
309 4,362,170
336 4,362,171
4,362,172

CLASS 132

9 4,362,173
84 R 4,362,174
119 4,362,175

CLASS 133

1 A 4,362,176
8 R 4,362,177

CLASS 134

18 4,362,572
31 4,362,573
83 4,362,178

CLASS 136

256 4,362,895
258 4,362,896

CLASS 137

3 4,362,179
15 4,362,180
68 R 4,362,181
85 4,362,182
489 4,362,183
516.29 4,362,184
625.17 4,362,185
4,362,186

CLASS 138

109 4,362,187

CLASS 139

76 4,362,188
336 4,362,189
370.2 4,362,190
384 B 4,362,191

CLASS 140

93.6 4,362,192

CLASS 141

94 4,362,193

CLASS 144

193 R 4,362,194
242 R 4,362,195
286 R 4,362,196
364 4,362,197

CLASS 148

1.5 4,362,574
4,362,575
2 4,362,576
6.15 R 4,362,577
11.5 C 4,362,579
11.5 N 4,362,578
16 4,362,580
31.55 4,362,581
127 4,362,582

CLASS 149

92 4,362,583
109.6 4,362,584

CLASS 150

3 4,362,198
12 4,362,199

CLASS 152

153 4,362,200
209 R 4,362,201
325 4,362,202

CLASS 156

62.2 4,362,585
71 4,362,586
87 4,362,587
219 4,362,588
254 4,362,589
294 4,362,590
300 4,362,591
402 4,362,592
498 4,362,593
567 4,362,594
626 4,362,595
627 4,362,596
643 4,362,597
4,362,598
647 4,362,599

CLASS 162

55 4,362,600

CLASS 164

16 4,362,203
4,362,204
109 4,362,205
448 4,362,206

CLASS 165

10 4,362,207
51 4,362,208
166 4,362,209

CLASS 166

85 4,362,210
217 4,362,211
245 4,362,212
267 4,362,213
322 4,362,214
367 4,362,215

CLASS 173

131 4,362,216

CLASS 174

31 R 4,362,897
35 R 4,362,898
36 4,362,899
42 4,362,900

	4,362,901
52 FP	4,362,902
94 R	4,362,903
138 G	4,362,904

CLASS 175

402	4,362,217

CLASS 177

154	4,362,218
245	4,362,219

CLASS 179

1 GD	4,362,906
1 PC	4,362,905
1 VE	4,362,907
18 HB	4,362,908
170.2	4,362,909

CLASS 180

68.5	4,362,220
73 R	4,362,221

CLASS 181

30	4,362,222
206	4,362,223

CLASS 187

29 R	4,362,224

CLASS 188

218 XL	4,362,225

CLASS 192

0.094	4,362,228
58 B	4,362,226
70.28	4,362,227
98	4,362,229
109 R	4,362,230

CLASS 193

2 R	4,362,231

CLASS 198

333	4,362,232
345	4,362,233
400	4,362,234
419	4,362,235
446	4,362,236
509	4,362,237
781	4,362,238

CLASS 200

5 A	4,362,911
5 B	4,362,912
5 EA	4,362,910
61.45 R	4,362,913
144 B	4,362,914
144 R	4,362,915
153 T	4,362,916

CLASS 203

19	4,362,601
59	4,362,602
75	4,362,603
	4,362,604

CLASS 204

1 T	4,362,605
105 R	4,362,606
108	4,362,607
109	4,362,608
195 S	4,362,609
263	4,362,610
298	4,362,611
301	4,362,612

CLASS 206

45.14	4,362,239
188	4,362,240
210	4,362,241
219	4,362,242
373	4,362,243
507	4,362,244
621	4,362,245

CLASS 208

108	4,362,613
235	4,362,614

CLASS 209

3.3	4,362,246
167	4,362,615

CLASS 210

225	4,362,616
	4,362,617
275	4,362,618
360.1	4,362,619
378	4,362,620
450	4,362,621
486	4,362,622
493.5	4,362,623
497.2	4,362,624
521	4,362,625
670	4,362,626
676	4,362,627
712	4,362,628
714	4,362,629
745	4,362,630
776	4,362,631

CLASS 211

13	4,362,247
50	4,362,248
59.1	4,362,249

CLASS 215

247	4,362,250

CLASS 219

10.55 E	4,362,917
10.81	4,362,918
56	4,362,920
61.2	4,362,921
137 R	4,362,919
369	4,362,922
441	4,362,923
497	4,362,924

CLASS 220

22	4,362,251
270	4,362,252
276	4,362,253
307	4,362,254

CLASS 222

107	4,362,255
383	4,362,256
402.2	4,362,257

CLASS 224

309	4,362,258

CLASS 226

123	4,362,259
190	4,362,260

CLASS 228

2	4,362,261
117	4,362,262
263 A	4,362,263

CLASS 229

27	4,362,264
32	4,362,265
33	4,362,266

CLASS 232

17	4,362,267

CLASS 235

51	4,362,925
92 CC	4,362,926
132 R	4,362,927
375	4,362,928
432	4,362,929
487	4,362,930

CLASS 236

13	4,362,268
14	4,362,269
46 R	4,362,270

CLASS 239

2 R	4,362,271
7	4,362,272
128	4,362,273
419.3	4,362,274
700	4,362,275

CLASS 241

24	4,362,276
37.5	4,362,277

CLASS 242

55.3	4,362,278
147 R	4,362,279

CLASS 244

1 TD	4,362,280
17.27	4,362,281

CLASS 246

468	4,362,282

CLASS 248

183	4,362,283
205 R	4,362,284
221.3	4,362,285
229	4,362,286
563	4,362,287
613	4,362,288
656	4,362,289

CLASS 249

60	4,362,290
144	4,362,291

CLASS 250

203 CT	4,362,932
203 R	4,362,931
213 VT	4,362,933
229	4,362,934
292	4,362,936
306	4,362,937
332	4,362,938
358.1	4,362,939
374	4,362,940
381	4,362,941
396 R	4,362,945
398	4,362,942
459.1	4,362,943
483	4,362,946
483.1	4,362,944
519.1	4,362,948

CLASS 252

46.4	4,362,633
49.5	4,362,634
56 R	4,362,636
56 S	4,362,635
62.3 BT	4,362,637
90	4,362,638
99	4,362,639
135	4,362,640
	4,362,641
174.16	4,362,642
175	4,362,643
389 R	4,362,644
408.1	4,362,645
422	4,362,646
425.3	4,362,647
429 B	Re.31,099
	4,362,648
430	4,362,649
431 C	4,362,650
440	4,362,651
453	4,362,652
455 R	4,362,653
469	4,362,654
474	4,362,655
518	4,362,656
522 R	4,362,657
609	4,362,658
629	4,362,659
631	4,362,660

CLASS 254

336	4,362,292

CLASS 260

112 B	4,362,661
239 R	4,362,662
239.3 P	4,362,663
244.4	4,362,664
245.2 T	4,362,665
245.7	4,362,666
396 R	4,362,668
429.1	4,362,669
465 K	4,362,670
465.5 R	4,362,671
544 F	4,362,672

CLASS 261

34 A	4,362,673

CLASS 264

22	4,362,674
28	4,362,675
35	4,362,676
41	4,362,677
46.3	4,362,678
82	4,362,679
83	4,362,680
112	4,362,681
143	4,362,682
167	4,362,683
230	4,362,684
297	4,362,685
317	4,362,686
318	4,362,687
503	4,362,688

CLASS 266

219	4,362,293

CLASS 267

170	4,362,294

CLASS 269

69	4,362,295

CLASS 271

121	4,362,296
152	4,362,297
236	4,362,298

CLASS 273

1 L	4,362,299
119 A	4,362,300
157 A	4,362,301
236	4,362,302
274	4,362,303

CLASS 277

27	4,362,304
113	4,362,305

CLASS 279

121	4,362,306

CLASS 280

30	4,362,307
	4,362,308
47.19	4,362,309
157	4,362,310
242 WC	4,362,311
404	4,362,312
628	4,362,313
637	4,362,314
650	4,362,315
656	4,362,316
	4,362,317
718	4,362,318
779	4,362,319
802	4,362,320
804	4,362,321
821	4,362,322

CLASS 285

4	4,362,323
119	4,362,324
190	4,362,325
315	4,362,326
332.3	4,362,327

CLASS 292

36	4,362,328

CLASS 296

26	4,362,329
97 F	4,362,330
194	4,362,331
217	4,362,332

CLASS 297

174	4,362,333
230	4,362,334
300	4,362,335
317	4,362,336

CLASS 299

31	4,362,337

CLASS 303

86	4,362,338
117	4,362,339

CLASS 305

31	4,362,340

CLASS 307

	4,362,949
45	4,362,950
66	4,362,951
77	4,362,952
141	4,362,953
142	4,362,954
263	4,362,955
355	4,362,956
527	4,362,957

CLASS 308

26	4,362,341
36.1	4,362,342
170	4,362,343
187.1	4,362,344
207 R	4,362,345

CLASS 310

59	4,362,958
64	4,362,959
65	4,362,960
370	4,362,961

CLASS 312

311	4,362,346

CLASS 313

331	4,362,962
407	4,362,963
414	4,362,964
420	4,362,965
422	4,362,966
493	4,362,967

CLASS 315

3.5	4,362,968
73	4,362,969
159	4,362,970
176	4,362,971
338	4,362,972
393	4,362,973
408	4,362,974

CLASS 318

293	4,362,975
341	4,362,976
568	4,362,977
	4,362,978
603	4,362,979
685	4,362,980
696	4,362,981

CLASS 320

64	4,362,982

CLASS 322

28	4,362,983

CLASS 323

313	4,362,984
314	4,362,985

CLASS 324

51	4,362,986
52	4,362,987
62	4,362,988
71 CP	4,362,989
117 R	4,362,990
158 P	4,362,991
247	4,362,992
309	4,362,993
449	4,362,994

CLASS 328

145	4,362,995
151	4,362,996

CLASS 329

50	4,362,997
103	4,362,998
	4,362,999

CLASS 330

56	4,363,000
107	4,363,001

CLASS 331

1 A	4,363,002
	4,363,003
8	4,363,004
112	4,363,005

CLASS 333

14	4,363,006
	4,363,007
24 R	4,363,008
177	4,363,009

CLASS 335

6	4,363,010
154	4,363,011

CLASS 336

60	4,363,012
	4,363,013
90	4,363,014

CLASS 337

56	4,363,016
117	4,363,015

CLASS 338

21	4,363,017
172	4,363,018
214	4,363,019

CLASS 339

14 R	4,362,347
75 M	4,362,348
89 M	4,362,349
143 R	4,362,350
214 R	4,362,351
248 S	4,362,352
258 P	4,362,353

CLASS 340

58	4,363,020
65	4,363,021
73	4,363,022
146.3 SY	4,363,023
347 AD	4,363,024
347 DA	4,363,025
347 P	4,363,026
365 R	4,363,027
384 E	4,363,028
501	4,363,029
511	4,363,030
539	4,363,031
679	4,363,032

CLASS 350

83	4,362,354
84	4,362,355
96.16	4,362,357
	4,362,358
96.19	4,362,359
96.20	4,362,356
	4,362,360
171	4,362,361
289	4,362,362
299	4,362,363
358	4,362,364
414	4,362,365
420	4,362,366
433	4,362,367

CLASS 351

169	4,362,368

CLASS 354

106	4,362,369
173	4,362,370
	4,362,371
195	4,362,372
234	4,362,373
242	4,362,374
319	4,362,376
320	4,362,375
	4,362,377

CLASS 355

3 SH	4,362,379
	4,362,380
3 TR	4,362,378
54	4,362,381
66	4,362,382
71	4,362,383
	4,362,384
77	4,362,385

CLASS 356

39	4,362,386
338	4,362,387
341	4,362,388
401	4,362,389

CLASS 358

181	4,363,033
213	4,363,034
	4,363,035
261	4,363,036
296	4,363,037

CLASS 360

13	4,363,049
17	4,363,038
19.1	4,363,039
32	4,363,050
33.1	4,363,051
51	4,363,040
59	4,363,052
67	4,363,053
71	4,363,041
	4,363,042
72.1	4,363,043
	4,363,054
80	4,363,055
98	4,363,044
	4,363,056
	4,363,057
104	4,363,045
106	4,363,046
107	4,363,047
122	4,363,058
132	4,363,059
137	4,363,048

CLASS 361

8	4,363,060
31	4,363,061
35	4,363,062
48	4,363,063
57	4,363,064
85	4,363,065
	4,363,066
91	4,363,067
	4,363,068
130	4,363,069
212	4,363,070
220	4,363,071
231	4,363,072
292	4,363,073
331	4,363,074
383	4,363,075
386	4,363,076
400	4,363,077
433	4,363,078
	4,363,079

CLASS 362

32	4,363,080
98	4,363,081
148	4,363,082
216	4,363,083
250	4,363,084
283	4,363,085
368	4,363,086
382	4,363,087

CLASS 363

59	4,363,088
137	4,363,089

CLASS 364

139	4,363,090
200	4,363,091
	4,363,092
	4,363,093
	4,363,094
	4,363,095
	4,363,096
431.11	4,363,097
434	4,363,098
484	4,363,099
	4,363,100
492	4,363,101
513	4,363,102
515	4,363,103
	4,363,104
580	4,363,105
746	4,363,106
758	4,363,107
900	4,363,108

CLASS 365

94	4,363,109

149 4,363,110
210 4,363,111

CLASS 366

61 4,362,390

CLASS 367

30 4,363,112
63 4,363,113
149 4,363,114
154 4,363,115

CLASS 368

34 4,362,391
82 4,362,392
96 4,362,393
118 4,362,394
146 4,362,395
203 4,362,396
233 4,362,397
240 4,362,398
255 4,362,399
4,362,400
309 4,362,401
317 4,362,402

CLASS 369

30 4,363,116
43 4,363,117
58 4,363,118
266 4,363,119
267 4,363,120

CLASS 370

24 4,363,121
81 4,363,122

CLASS 371

5 4,363,123
21 4,363,124
71 4,363,125

CLASS 372

38 4,363,126

CLASS 374

4 4,362,057
4,362,403
39 4,362,404

CLASS 375

30 4,363,127

CLASS 376

148 4,362,689
4,362,690
267 4,362,691
268 4,362,692
298 4,362,693
4,362,694
314 4,362,695
417 4,362,696

CLASS 378

48 4,362,935
150 4,362,947
181 4,363,128

CLASS 400

121 4,362,405
124 4,362,406
4,362,407
481 4,362,408
625 4,362,409

CLASS 401

67 4,362,410

CLASS 403

5 4,362,411
11 4,362,412
14 4,362,413
24 4,362,414
109 4,362,415
316 4,362,416
317 4,362,417
334 4,362,418
343 4,362,419
4,362,420
369 4,362,421
387 4,362,422
393 4,362,423

CLASS 404

6 4,362,424
16 4,362,425
40 4,362,426
64 4,362,427
4,362,428
68 4,362,429
4,362,430
117 4,362,431

CLASS 405

33 4,362,432
107 4,362,433
128 4,362,434
154 4,362,435
161 4,362,436
188 4,362,437
195 4,362,438
228 4,362,439
269 4,362,440

CLASS 406

14 4,362,441
71 Re.31,098
109 4,362,442
188 4,362,443

CLASS 408

17 4,362,444
182 4,362,445
211 4,362,446

CLASS 409

200 4,362,447
300 4,362,448

CLASS 411

156 4,362,449
258 4,362,450

CLASS 414

23 4,362,451
37 4,362,452
268 4,362,453
280 4,362,454
306 4,362,455
334 4,362,456
345 4,362,457
458 4,362,458
584 4,362,459
745 4,362,460
752 4,362,461

CLASS 415

1 4,362,462
129 4,362,463
136 4,362,464
144 4,362,465

CLASS 416

142 4,362,466
157 R 4,362,467
186 R 4,362,468
191 4,362,469
197 A 4,362,470
241 B 4,362,471

CLASS 417

53 4,362,472
68 4,362,473
80 4,362,474
295 4,362,475
360 4,362,476
364 4,362,477
434 4,362,478

CLASS 418

61 B 4,362,479
152 4,362,480
256 4,362,481

CLASS 419

5 4,362,563

CLASS 422

56 4,362,697
102 4,362,698
131 4,362,699
179 4,362,700
183.04 4,362,632
194 4,362,701

CLASS 423

41 4,362,702
116 4,362,703
150 4,362,704
167 4,362,705
273 4,362,706
478 4,362,707
634 4,362,708
636 4,362,709

CLASS 424

14 4,362,710
33 4,362,711
49 4,362,712
54 4,362,713
70 4,362,714
78 4,362,715
177 4,362,716
4,362,717
4,362,718
178 4,362,719
180 4,362,720
4,362,721
219 4,362,722
222 4,362,723
246 4,362,724
4,362,725
248.51 4,362,726
4,362,727
249 4,362,728
253 4,362,729
256 4,362,730
4,362,731
4,362,732
260 4,362,733
263 4,362,734
4,362,735
270 4,362,736
273 R 4,362,737
274 4,362,738
4,362,739
275 4,362,740
281 4,362,741
283 4,362,742
4,362,743
305 4,362,744
319 4,362,745
330 4,362,746
358 4,362,747

CLASS 425

4 C 4,362,482
78 4,362,483
4,362,484
79 4,362,485
110 4,362,486
111 4,362,487
113 4,362,488
127 4,362,489
128 4,362,490
186 4,362,491
309 4,362,492
345 4,362,493
4,362,494
376 A 4,362,495
379 R 4,362,496
510 4,362,497
526 4,362,498

CLASS 426

1 4,362,748
36 4,362,749
59 4,362,750
94 4,362,751
104 4,362,752
332 4,362,753
503 4,362,754
579 4,362,755
587 4,362,756
599 4,362,757
603 4,362,758
632 4,362,759
641 4,362,760
657 4,362,761

CLASS 427

2 4,362,762
14.1 4,362,763
4,362,764
38 4,362,765
39 4,362,766
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	381	267,132		51	267,145		131	267,161		59	267,174		212	267,184	D24—	33	267,197
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